DEPARTMENT OF THE ARMY
Omaha District, Corps of Engineers
106 South 15th Street
Omaha, Nebraska 68102-1618

:NOTICE: Failure to acknowledge :all amendments may cause rejec- :tion of the bid. See FAR :52.214-3 of Section 00100 :	Solicitation No. W9128F 04 B 0011 Date of Issue: 8 JUL 2004 Date of Opening: 19 AUG 2004

Amendment No. 0004
11 August 2004

SUBJECT: Amendment No. 0004 to Specifications and Drawings for Construction of **ADAL Physical Fitness Center, Minot AFB, North Dakota**.

Solicitation No. W9128F 04 B 0011.

TO: Prospective Bidders and Others Concerned

1. The specifications and drawings for subject project are hereby modified as follows (revise all specification indices, attachment lists, and drawing indices accordingly).

a. Specifications. (Descriptive Changes.)

(1) Section 00800, as an appendix to this section, add the "Hazardous Material Survey Report", which is attached to this amendment.

(2) Section 00800, page 3, paragraph 1.1, in first sentence ("The Contractor...to Proceed"), delete "450" and substitute "540".

(3) Section 09310, Page 5, paragraph 2.1.3, Glazed Wall Tile, delete entire paragraph and insert the following:

"2.1.3 Textured Ceramic Floor Tile
Tile shall be 3 inches x 3 inches. Color shall be in accordance with Section 09915 COLOR SCHEDULE."

(4) Section 09915, Page 6, paragraph 2.2.4.8, Ceramic Tile, following "Ceramic Tile" delete the entire paragraph and insert the following:

"CT-1: Crossville Cross-Colors, Color: Pepper Quartz #A291UPS (8" x 8")
CT-2: Crossville Cross-Colors, Cross Tread, Color: Pepper Quartz #A291CTS (3" x 3")
CT-4: Crossville Cross-Colors, Color: Platinum C810 (8" x 8")
CT-5: Crossville Cross-Colors, Color: Windsurf C583 (8" x 8")
CT-6: Crossville Cross-Colors, Color: Platinum C810 (8" x 8")"

(5) Section 09915, Page 7, paragraph 2.2.5.2 Ceramic Tile, change "Mosaics" to "Cross Tread" and following "(CT-1,2)" add "6" x 8"".

(6) Section 09915, Page7, paragraph 2.2.6.2 Ceramic Tile, following "Ceramic Tile" delete the entire paragraph and insert the following:

"CT-3: Crossville Cross-Colors, Color: Empress White #A215 (8" x 8")
CT-4: Crossville Cross-Colors, Color: Platinum C810 (8" x 8")
CT-5: Crossville Cross-Colors, Windsurf C583 (8" x 8")

CT-6: Crossville Cross-Colors, Color: Platinum C810 (8" x 8")"

b. Specifications (New and/or Revised and Reissued). Delete and substitute or add specification pages as noted below. The substituted pages are revised and reissued with this amendment.

Pages Deleted	Pages Substituted or Added
Section 13289 (issued in Amendment #3)	Section 13289 ASBESTOS ABATEMENT
---	Hazardous Material Survey Report (Appendix to Section 00800)

c. Drawings (Not Reissued). The following sheets of drawing code AF AF740-28-01 are revised as indicated below with latest revision date of 10 August 2004. These drawings are not reissued with this amendment.

(1) Sheet A5.03 at all wall sections shown, change note from “2 inch rigid insulation” to “2 inch perimeter insulation at foundation wall and 2 inch under slab, perimeter insulation 2’-0” from the inside face of the foundation wall.”

(2) Sheet A5.04 at all wall sections shown, change note from “2 inch rigid insulation” to “2 inch perimeter insulation at foundation wall and 2 inch under slab, perimeter insulation 2’-0” from the inside face of the foundation wall.”

(3) Sheet A5.05 at all wall sections shown, change note from “2 inch rigid insulation” to “2 inch perimeter insulation at foundation wall and 2 inch under slab, perimeter insulation 2’-0” from the inside face of the foundation wall.”

(4) Sheet A5.06 at wall sections 1, 2 and 3, change note from “2 inch rigid insulation” to “2 inch perimeter insulation at foundation wall and 2 inch under slab, perimeter insulation 2’-0” from the inside face of the foundation wall.”

(5) Sheet A5.07 at wall sections 1 and 2, change note from “2 inch rigid insulation” to “2 inch perimeter insulation at foundation wall and 2 inch under slab, perimeter insulation 2’-0” from the inside face of the foundation wall.”

(6) Sheet A5.08, Sheet reference 1-B at wall types 12A, 12B and 12C, delete note “Existing Partition” and change note at top of partition stud from "Underside of Structure" to “Top of stud 6 inches above finished ceiling” and delete top of partition reference detail “19/A9.05 Sim.”

(7) Sheet i1.06, at details 5 and 6, change note "CT-5" to "CT-3".

(8) Sheet i1.06, at Finish Key – Tile Legend, delete the following:

After CT-4 delete "(LIGHT BLUE)".
After CT-5 delete "(BLUE)".
After CT-6 delete "(DARK BLUE)".

d. Drawings (New). The following new drawings dated 10 August 2004 are hereby added to the contract drawings and are issued with this amendment.

(1) Sheet SKA10204
(2) Sheet SKA10205
(3) Sheet SKA10206

2. This amendment is a part of the bidding papers and its receipt shall be acknowledged on the Standard Form 1442. All other conditions and requirements of the specifications remain unchanged. If the bids have been mailed prior to receiving this amendment, you will notify the office where bids are opened, in the specified manner, immediately of its receipt and of any changes in your bid occasioned thereby.

a. Hand-Carried Bids shall be delivered to the U.S. Army Corps of Engineers, Omaha District, Contracting Division (Room 301), 106 South 15th Street, Omaha, Nebraska 68102-1618.

b. Mailed Bids shall be addressed as noted in Item 8 on Page 00010-1 of Standard Form 1442.

3. Bids will be received until 2:00 p.m., local time at place of bid opening, 19 AUG 2004.

Attachments:
Hazardous Material Survey Report
Spec Pages listed in 1.b. above
Dwgs. listed in 1.d. above

U.S. Army Engineer District, Omaha
Corps of Engineers
106 South 15th Street
Omaha, Nebraska 68102-1618

11 August 2004
JDW/4529

HAZARDOUS MATERIAL SURVEY REPORT

Minot Air Force Base
Fitness Center
Minot, North Dakota
ATC Project Number 22.23633.0003

Prepared for:

SLL/ Leo A. Daly
730 Second Avenue South
Suite 1100
Minneapolis, MN 55402-2454

July13, 2004

ASSOCIATES INC.

1929 County Road C2 West
Roseville, Minnesota 55113
651.635.9050
Fax 651.635.9080
www.atc-enviro.com

July 13, 2004

SLL/ Leo A. Daly
Attn: Debra Young
730 Second Avenue South
Suite 1100
Minneapolis, MN 554402-2454

Re: Hazardous Material Survey Report
ADAL Fitness Center
Minot, North Dakota
ATC Project Number 22.23633.0003

Dear Ms. Young:

ATC Associates Inc. (ATC) is pleased to submit the enclosed Hazardous Material Survey Report for the above-referenced Army Corps of Engineers Project. The survey was conducted beginning on March 23, 2004 and concluded on March 25, 2004, in accordance with in accordance with contract DACA45-03-D-0012, dated December 30, 2003.

ATC appreciates the opportunity to be of service to SSL/ Leo A. Daly on this project and looks forward to working with you on future assignments. In the meantime, if you have questions or comments regarding the information in this report or if we can be of further assistance, please do not hesitate to contact the undersigned in the ATC Roseville, Minnesota, office at (651) 635-9050.

Sincerely,
ATC Associates Inc.

John R. Bissen
Project Manager

Bryan Murdock
Branch Manager

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APPENDICES

1.0 EXECUTIVE SUMMARY

Beginning on March 24, 2004, ATC Associates Inc. (ATC) conducted a Hazardous Material Survey of the Minot Air Force Base (AFB) Fitness Center Area. The site is an area approximately 12 acres in size and includes three gymnasiums, four racquet ball courts, two weight training areas, an aerobic conditioning area, pool and locker rooms for both men and women. ATC understands that the north and south gymnasium buildings of the fitness center complex area will be demolished and the middle gymnasium and locker room areas will be renovated beginning in June of 2004. The following sections summarize the results of ATC's Hazardous Materials Survey.

Asbestos Containing Materials (ACM)

ATC reviewed previous asbestos survey documents by Hall-Kimbrell Environmental Services Inc. (Hall-Kimbrell) and performed a site walk to develop a sampling scheme that would supplement existing documentation. ATC's review of previous documentation revealed that four (4) building materials were identified during previous assessments as containing greater than 1% asbestos. The four (4) previously identified materials included, asbestos pipe and fitting insulation, boiler insulation, isolation joint fabric and floor tile and mastics. The scope of ATC's ACM survey included collecting samples of known ACM from the previous assessment and suspect ACM materials not previously sampled. ATC collected thirty-four (34) asbestos bulk samples from the areas subject to demolition, and fifty (50) asbestos bulk samples from the areas subject to renovation. Bulk samples were analyzed by utilizing the Polarized Light Microscopy (PLM) at ATC's Centennial, Colorado laboratory. Many of the bulk samples submitted contained multiple layers, which resulted in the analysis of a total of fifty-three (53) separate building material layers from the renovation area and forty four (44) separate building material layers from the demolition area. A total of seventeen (17) building materials were sampled, including nine separate 2' x 4' ceiling tiles, one type of 2' x 2' ceiling tile, ceiling tile caulk, cork racquet ball flooring, wall texture, sheetrock wall system composite and three adhesives in the areas scheduled for renovation. An additional twelve (12) building materials were sampled, including rubber gym flooring, rubber gym floor adhesive, gym floor shock absorber, four (4) separate types of 2' x 4' ceiling tiles, 2 types of 12" x 12" floor tiles, sheetrock wallboard composites, sink undercoating and base cove

adhesive in the areas scheduled for demolition. In addition to materials sampled by Hall-Kimbrell, ATC identified one material (12" x 12" green floor tile) that contained greater than one percent (>1%) asbestos. Additionally, the Toxics Program Management Group (TPMG) of Minot AFB identified mechanical system isolation joints and a potential for below ground asbestos containing cement (transite) waste and water piping that contained greater than 1% asbestos within the boundaries of the scheduled renovation and demolition. The asbestos containing pipe insulation and floor tile throughout the renovation areas needs to be removed by a North Dakota licensed Abatement contractor in compliance with all federal, state and local regulations. The floor tile on wood flooring located in the upper mezzanine level (demolition area) of the north gym does not need to be removed as this material will be disposed of as demolition waste. The mechanical system isolation joints will need to be removed prior to the demolition of the suspended heating unit in south gymnasium. If the asbestos containing cement (transite) water piping is encountered during the below grade excavation, the transite piping must be separated from the waste stream and disposed of as asbestos containing waste. ATC also recommends any connections to this systems be made at the joints to prevent the need for sawing, cutting and/or drilling into the portion that is to remain.

Lead and Lead Based Paint

Eight (8) samples of lead base paint were collected from various locations throughout the demolition and renovation areas. A sample of orange paint (MAFB-LBP-6) collected from the men's locker room interior roof deck showed an 89.97 % lead concentration (% by weight). This paint will be required to be brought to a stabile and intact condition by an Abatement Contractor who is trained in the federal OSHA lead standards. This will include clean-up of and peeling paint and debris prior to renovation activities.

Mercury

Three (3) separate types of wall mounted mercury ampoule thermostats were observed throughout the renovation and demolition areas associated with this survey. Potential mercury containing temperature control/thermostats were observed in association with water heaters and gas fired area heaters throughout the renovation and demolition areas associated with this survey. These temperature control/ thermostats are assumed to contain mercury. These types of equipment

encountered during routine maintenance or renovation/demolition activities should be disposed of in accordance with applicable regulations. ATC recommends the mercury containing floor be removed and disposed of in a landfill approved to accept this type of material.

Polychlorinated Biphenyls (PCBs)

Fluorescent lights were observed throughout the renovation and demolition areas associated with this survey. The ballasts and starters are assumed to contain PCBs, and were observed throughout the renovation and demolition areas associated with this survey. The light ballasts were not examined for labels identifying the PCB content. However, based on the date of construction for portions of the site building (pre-1987), the ballasts are a potential source of PCBs. Ballasts encountered during routine maintenance or renovation/demolition activities should be disposed of in accordance with applicable regulations.

Appliances

A refrigerator and window mounted air conditioner was observed in the front entry to the north gymnasium scheduled for demolition. These items must be removed and disposed of properly prior to demolition activities.

Miscellaneous Small Quantity Household Items

All paints, solvents and cleaning supplies within the areas of renovation or demolition should be removed and disposed of prior to renovation and demolition activities.

Underground Storage and Above Ground storage Tanks (UST, AST)

The TPMG reported that there were no UST's or AST's in the areas of renovation or demolition.

Computer Equipment

All computer equipment such as hard drives, CRT's, keyboards, printer and any other periphery equipment should be removed and recycled prior to renovation or demolition activities.

Solid Waste

All other appurtenances such as desks, chairs, exercise equipment and furniture must be removed and disposed of independent of the demolition and renovation waste stream.

2.0 SCOPE OF WORK

As extracted from contract DACA-45-03-D-0012 dated December 30, 2003:

> **10.9 SAFETY AND HEALTH:**
>
> Review existing surveys and reports for environmentally hazardous materials for housing units and utilities to be demolished. Determine whether gaps in information regarding these materials exist and whether additional surveys are necessary to validate or supplement existing information and to support development of RFP requirements. As needed for RFP development, perform surveys to identify, locate, and (if necessary) quantify materials such as asbestos-containing building materials, lead-based paint, polychlorinated biphenyl (PCB)-containing light ballasts, and mercury-containing light tubes and/or thermostats, which may require special handling and/or disposal prior to or during demolition activities. All survey activities shall comply with applicable Federal, State, and base regulations and guidance. Provide reports sufficient to support development and completion of RFP sections pertaining to demolition, special health and safety requirements, and special handling and disposal requirements.

3.0 BACKGROUND

Minot Air Force Base Fitness Center Renovation/Demolition Project

ATC understands that the north and south gymnasium buildings of the fitness center complex area will be demolished and the middle gymnasium and locker room areas will be renovated beginning in June of 2004.

Site Description

The site consisted of an approximate 12-acre parcel located along the southwest corner of the intersection of Chopper Path and Tanker Trail of the Minot Air Force Base (AFB), Minot, North Dakota. The fitness center (site) consists of six different buildings attached to form the fitness center complex constructed beginning in the early 1950s and continuing through the early 1980s. Three gymnasiums, a weight training/ racquetball building, a cardio/office/locker room building and pool building comprise the site. The gymnasiums, north, middle and south, were steel girder expansion system wall and roof decking. Each gymnasium (gym) included a hardwood floor and the south gym also included a rubber indoor running track. These buildings are heated via wall and or ceiling mounted, gas fired area heaters. The remaining buildings were constructed of concrete slab floors, below-grade poured and or block foundations, metal structures with built up or pitched metal roofs, sheetrock wallboard walls and lay in tile ceilings. The floor coverings included carpet, ceramic tile, rubber system flooring and hardwood floors. The windows throughout cardio/office/locker room building had been replaced with factory painted aluminum window systems sealed in place with butyl caulking. The domestic water piping was not insulated nor was it covered with fiberglass or foam rubber insulation in the north gymnasium and pool buildings. Mechanical system piping located in the middle gymnasium, south gymnasium, north, east and south mechanical rooms, locker rooms, locker room hallways and above the ceiling of the weight training areas were insulated with asbestos containing pipe insulation. The exterior finishing of the buildings were electrostatic finished steel and/or aluminum siding, soffit and fascia.

Interview with Minot AFB Toxics Program Management Group

On March 22, 2004, ATC Associates Inc. (ATC) conducted an interview with Mr. Warren Fried, Chief of Design, and 2nd Lieutenant Griffin of the Toxics Program Management Group (TPMG) of the Minot AFB. During this interview Mr. Fried, and Lt. Griffin of TPMG answered questions concerning the upcoming demolition and renovation of the fitness center complex.

ATC inquired about known hazardous materials including but not limited to: Polychlorinated Biphenyl (PCB) containing equipment, underground storage tanks (USTs), mercury-containing equipment, asbestos, and lead based paint.

ATC was advised that potential PCB ballasts associated with fluorescent lighting had been encountered previously and had been removed from various locations throughout the facility as encountered during renovation and maintenance activities and recycled through a local recycling contractor.

The TPMG plan to remove the remaining mercury containing thermostats during demolition.

ATC was advised that underground storage tanks (USTs) are not currently and have not formerly occupied the site. The buildings are supplied with natural gas via underground piping.

ATC was advised that mercury ampoule thermostats have been encountered previously and have been removed TPMG staff and recycled through a local recycling contractor.

ATC and TPMG members discussed asbestos containing materials (ACM) identified during previous renovation and maintenance projects. These items included fabric HVAC isolation joints, pipe and pipe fitting insulation, floor tile and floor tile mastics.

ATC was advised that lead based paint (LBP) surveys had not been conducted previously.

ATC advised the TPMG that all of known hazardous materials that included paint, solvents, mercury switches, ballasts, fluorescent bulbs, and computer equipment would need to be removed from the areas scheduled for demolition prior to demolition.

It was reported to ATC that the TPMG personnel would be removing a portion of the items identified by this survey prior to the demolition and renovation of the fitness Center. The abatement of ACM and LBP will be and additional task assigned to the successful low bidder for the demolition and renovation of the site.

Previous Survey Document Description and Review

ATC reviewed the Asbestos Identification Survey conducted by Hall-Kimbrell Environmental Services (Hall-Kimbrell), dated January of 1989. Mr. Warren Fried, Chief of Design, and 2nd Lieutenant Griffin of the TPMG of Minot AFB provided the Hall-Kimbrell report to ATC. The Hall-Kimbrell survey included the inspection of mechanical spaces of what will be referred in this report as the south gymnasium, middle gymnasium locker rooms, locker room hallways and the weight training areas. Since 1989, the Hall-Kimbrell survey areas have been subjected to significant renovation and remodeling. Based on the age and limited extent of sampling in the Hall-Kimbrell survey, and the obvious changes to the surveyed areas, the previous survey does not provide a clear and distinct determination of the amount and location of previous identified ACM. Additional sample collection of sheetrock wall board systems, ceiling tiles, adhesives and flooring materials associated with the gymnasium hardwood and rubber floors is needed to supplement the Hall-Kimbrell report. ATC identified in the Hall-Kimbrell report that the sampling protocol also did not include composite sampling of the sheetrock wall board systems throughout the survey area. This was a needed component of the ATC portion of the survey as the significant portion of the operation was complete demolition of the large portion of the facility. See reference to "Asbestos NESHAP Clarification Regarding Analysis of Multi-layered Systems", Federal Register, Volume 5, Number 3, page 542, January 5, 1994. See Appendix E. In brief, if the wallboard composite samples were determined to be less than 1% asbestos, the wallboard system would not be required to be removed prior to demolition as an asbestos containing material. The floor tiles and associated mastics, referred to as Regulated Asbestos Containing Material (RACM), Category I Non-friable, per NESHAP "need not be removed before demolition if; it is Category I non-friable that is not in poor condition and is not friable." See also attached "Demolition Practices under the Asbestos NESHAP" in Appendix E.

Upon completion of the review of the Hall-Kimbrell report, ATC began the physical portion of the Hazardous Material Survey of Minot AFB Fitness Center in Minot, North Dakota hereinafter referred to as the site. The survey was performed by ATC representative John R. Bissen (North Dakota Department of Health Inspector Certificate Number 776, see Appendix D) in accordance with in accordance with contract DACA45-03-D-0012, dated December 30, 2003.

4.0 ASBESTOS SURVEY

The purpose of the survey was to identify, locate, sample, and assess the condition of accessible building materials that were suspected of containing hazardous materials to include asbestos, lead based paint condition, lead construction materials, polychlorinated biphenyl (PCB) containing equipment, mercury containing equipment and other materials deemed unsafe or hazardous in conjunction with the demolition and renovation of this site.

Asbestos Survey Procedures - General

The site was inspected for the presence of material that may contain greater than one percent (>1%) asbestos. The inspection of the interior and exterior portions of buildings at the facility included destructive sampling procedures. ACMs are divided into three main categories: Surfacing Materials, Thermal System Insulation, and Miscellaneous Materials. Suspect materials identified were described and categorized into homogeneous areas (HAs). A HA consists of identified material found in various locations in a building that appear uniform in color, appearance, pattern, texture, and date of installation. The HA can be described as being present throughout the facility.

The asbestos portion of the Hazardous Material Survey was conducted according to Asbestos Hazard Emergency Response Act (AHERA) and National Emission Standards for Hazardous Air Pollutants (NESHAPS) guidelines using a minimum number of samples collected from each HA, which meets the sampling criteria found in 29 CFR 1926.1101. Additionally, pursuant “Asbestos NESHAP Clarification Regarding Analysis of Multi-layered Systems”, Federal Register, Volume 5, Number 3, page 542, January 5, 1994, the sheetrock wallboard systems throughout the site were sampled as composites for the purposes of demolition. See Appendix E.

The number of samples required for collection depends on the category that the HA falls into and the amount of material present. The following table summarizes sampling requirements.

AHERA GUIDELINES FOR DETERMINING THE NUMBER OF SAMPLES TO COLLECT AND ANALYZE		
HA CATEGORY	**HA SIZE**	**SAMPLES REQUIRED**
Surfacing Materials	<1,000 SF	3 per homogenous area
	1,000-5,000 SF	5 per homogenous area
	>5,000 SF	7 or more per homogenous area
Thermal System Insulation	No Stipulation	3+ (Must also sample all repair patches) per homogenous area
Miscellaneous Materials	No Stipulation	Per AHERA, these materials must be sampled "in a manner sufficient to determine whether or not they contain asbestos" typically 1-3 samples based upon inspector judgment per homogenous area

Sampling Protocol

Choosing Sample Locations

Samples of suspect miscellaneous materials were collected in a randomly distributed manner sufficient to identify if the materials were asbestos containing. No samples were collected from HAs where the inspector observed the material to be non-suspect ACM (such as thermal system insulation that was obviously fibrous glass, foam glass, or rubber).

Sampling Methods

Samples were obtained with tools designed to penetrate a material without creating excessive dust. A utility knife, chisel, and hammer were utilized, rather than scratching a sample from the surface of suspected materials, in an effort to obtain a sample that was representative of all layers of the material. Where practical, a small, broken piece of the material was found and used as a sample.

ATC sampling procedures incorporate the use of plastic zip-lock bags, which are labeled in a unique numbering sequence to store the bulk samples. As samples were collected, the information about bulk samples, including the sample number and material description, were noted on the chain-of-custody sheets. The analytical results, laboratory chain-of-custody and bulk sampling sheets are included in Appendix A.

Analytical Protocol

Asbestos Sample Analysis

Eighty-four (84) bulk samples of suspect building materials were collected from the survey area. Fifty (50) of the eighty-four (84) samples were collected from the renovation areas and thirty- four (34) samples collected from the demolition areas. Of the eighty-four (84) samples collected some samples contained multiple layers and ninety-seven (97) analyses were conducted by the ATC Associates Inc., Centennial, Colorado asbestos laboratory utilizing Polarized Light Microscopy (PLM) methodology. Both the American Industrial Hygiene Association (AIHA) and the National Voluntary Laboratory Accreditation Program (NVLAP) accredit the laboratory for PLM analysis. PLM analysis requires the microscopist to take a portion of the sample and treat it with an oil of specific refractive index. The prepared slide is then subjected to a variety of tests while being viewed under varying polarizations of light. Each type of asbestos displays unique characteristics when subjected to these tests. Percentages of the identified types of asbestos are determined by visual estimation.

ATC has separated the survey into two portions. The samples for the renovation portion of the project were collected, analyzed and reported separately from those associated with the demolition portion of the project. This was done to provide sampling information to remain on site with Base TPMG for future reference for materials that will remain during the renovation. The demolition materials will obviously need only record keeping consideration. The areas of renovation are described as the locker rooms, locker room hallways, weight training, racquetball courts, cardio training, office area and the middle gymnasium. Figure 1, 2 and 3 in the attached Figures Appendices highlights the site layout, demolition and renovation areas as well as identified materials locations. Demolition will include the north and south gymnasiums.

Site Observations

The following table summarizes site observations and interviews. Potential ACM containing items observed are designated by an “X”. Materials confirmed to contain asbestos are designated by bold text.

Asbestos

Asbestos is a naturally occurring mineral that separates into strong, very fine fibers. These fibers float in the air and are easily breathed into the lungs, causing serious health problems. Asbestos is not combustible, has high tensile strength, has good thermal and electrical insulating properties, is moderately resistant to chemicals, and has good frictional properties. It is durable, flexible, strong and resistant to wear. Thus, asbestos has been used for thousands of commercial and public applications including many types of building materials, products and insulation. You can't tell whether a material contains asbestos simply by looking at it, unless it is labeled. Asbestos presence or absence must be confirmed by professional sampling and laboratory analysis.

☐	**Boiler rooms:**
☐	Boilers, Furnaces, Fireplaces, and their components:
☐	Cement sheets near heating equipment:
☐	Boiler insulation:
☐	HVAC Duct insulation:
☒	**Ductwork flexible fabric connections: Observed at south gym suspended heater**
☒	Fireproofing materials:
☐	Firedoors: indicative of asbestos containing doors historically used as fire barriers
Flooring:	
☒	**Vinyl floor tile: North gym mezzanine, middle gym west entries**
☐	Vinyl sheet flooring:
☐	Asphalt tile:
☐	Linoleum paper backing:
☒	**Mastic (floor tile, carpet, etc.) associated with west entries to middle gym, see above**
Electrical:	
☐	Electrical panels:
☐	Electrical wiring insulation:
☐	Heating and electrical ducts/conduit:
Pipe and other insulation:	
☐	Aircell (corrugated cardboard):
☐	Millboard:
☒	**Preform: 2500 lineal feet in renovation area and south, east and north mechanical rooms**
☒	Joint compound:
☐	Spray applied insulation:
☐	Blown-in insulation:
Surfacing materials:	
☐	Acoustical plaster:
☐	Decorative plaster:
☒	Textured paints coatings: walls of weight training areas
☐	Spray applied materials (acoustical, decorative, or insulative):
Roofing:	
☐	Roofing shingles:
☐	Roofing felt:
☐	Base Flashing:
☐	Pre-Demolition Environmental Checklist and Guide form (w-sw4-20.doc) Revised 12/00
Cement materials (Transite):	
☒	**Cement pipes reported by Base TPMG transite waste and water pipe exist below ground**
☐	Cement Wallboard:
☐	Cement siding:
☐	Pegboard:

Asbestos	
Ceiling materials:	
☒	Ceiling tiles:
☐	Ceiling tile adhesives (pucks):
☒	Lay in ceiling panels:
☐	Acoustical tiles:
Miscellaneous:	
☒	Taping, joint, and spackling compound:
☐	Caulking/putties:
☐	Fire curtains and blankets:
☐	Laboratory hoods, table tops, gloves, etc.:
☒	**Gaskets: likely present in bolted flange connections in mechanical piping systems**
☐	Light fixture heat shields:

Survey Results

Asbestos Containing Building Materials

The results of the Asbestos Containing Building Material Inspection Document Review and Site Survey portion of the ATC Hazardous Material Survey indicate four (4) building materials, including pipe and pipe fitting insulation located in the south gymnasium, middle gymnasium, locker rooms, locker room hallways and the weight training areas, 12" by 12" green floor tile located below the carpet in the mezzanine of the north gymnasium, 12"by 12" tan/brown floor tile located at the west entry to the middle gymnasium and associated black mastic, and HVAC fabric isolation joint located on the suspended heating unit of the south gymnasium were found to contain greater than one percent >1% asbestos in content.

Renovation Areas

Surfacing Material

Sheetrock Wall Texture

ATC collected three samples (ATC samples MAFB-R-12 to MAFB-R-14) from the sheetrock walls located throughout the weight training area. This material was observed in good, non-friable condition. No asbestos detected in these samples**.**

Thermal System Insulation

Pipe Insulation, pre-formed magnesia

The Hall-Kimbrell report identified asbestos in 16 different samples of pipe insulation throughout the facility as it existed in 1989. The Hall-Kimbrell report is based on areas that would now be

considered the south gymnasium, middle gymnasium, locker rooms, locker room hallways and weight training areas. ATC observed pipe insulation consistent with this material in the east, north and south mechanical rooms, above the ceilings of the locker rooms, locker room hallways, weight training area, south gym suspended heating unit and the middle gym perimeter piping. **Asbestos was detected in the pipe insulation samples by Hall-Kimbrell in 1989. ATC observed approximately 2500 linear feet (lf) through out these areas in the fitness center complex.**

Pipe Fitting Insulation

The Hall-Kimbrell report identified asbestos in 16 different samples of pipe fitting insulation throughout the facility. ATC observed pipe fitting insulation consistent with this material in the east, north and south mechanical rooms, above the ceilings of the locker rooms, locker room hallways, weight training area, south gym suspended heating unit and the middle gym perimeter piping. **Asbestos was detected in the pipe insulation samples. Approximately 500 fittings were observed through out these areas.**

Miscellaneous Materials

2"x 2" Ceiling Tile, White, Cloud Dot Pattern

ATC collected three samples (ATC samples MAFB-R-1 to MAFB-R-3) from the ceiling tiles located at the north end of the racquetball courts. The material was observed in fair condition and asbestos was not detected in the samples.

Ceiling tile caulk, white rubbery.

ATC collected one sample (ATC sample MAFB-R-4) from the seams in the ceiling tile in the north end of the racquetball courts. This material was observed in good non-friable condition and asbestos was not detected in this sample**.**

Cork floor material

ATC collected one sample (ATC sample MAFB-R-5) from the floor in the racquetball court. This material was observed in good non- friable condition and asbestos was not detected in this sample**.**

2’x 4’ Ceiling Tile, White, left to right fissure

ATC collected three samples (ATC samples MAFB-R-6 to MAFB-R-8) from the ceiling tiles located throughout the weight training area. This material was observed in good, non-friable condition and no asbestos was detected in these samples**.**

2’x 4’ Ceiling Tile, White, small crater

ATC collected three samples (ATC samples MAFB-R-9 to MAFB-R-11) from the ceiling tile located in the nautilus machine portion of the weight training area. This material was observed in good, non-friable condition and no asbestos was detected in these samples**.**

Sheetrock wall board composite, sheetrock, tape and taping compound

ATC collected three samples (ATC samples MAFB-R-15 to MAFB-R-17) from the sheetrock walls located throughout the weight training area. This material was observed in good, non- friable condition and no asbestos was detected in these samples**.**

2’x 4’ Ceiling tile, mauve, rough texture

ATC collected three samples (ATC sample MAFB-R-18 to MAFB-R-20) from the ceiling tiles located throughout the racquetball hallway area. This material was observed to be in good, non-friable condition and no asbestos was detected in these samples**.**

2’x 4’ Ceiling tile, white, granular texture

ATC collected three samples (ATC sample MAFB-R-21 to MAFB-R-23) from the ceiling tiles located throughout the main entry, gym hallway, and locker room hallway areas. These tiles were observed to be in good, non-friable condition and no asbestos was detected in these samples.

2’x 4’ Ceiling tile, white, large random fissure

ATC collected three samples (ATC samples MAFB-R-24 to MAFB-R-26) from the ceiling tiles located throughout the main entry and gym locker room hallway areas. This material was observed to be in good, non-friable condition and no asbestos was detected in these samples.

2'x 2' Ceiling tile, white, pinhole pattern

ATC collected three samples (ATC samples MAFB-R-27 to MAFB-R-29) from the ceiling tiles located throughout the men's locker room area. This material was observed in good, non-friable condition and no asbestos was asbestos in these samples**.**

New sheetrock taping compound

ATC collected three samples (ATC samples MAFB-R-30 to MAFB-R-32) throughout the locker room hallway. This material was observed in good, non-friable condition and no asbestos was detected in these samples.

2'x 4' Ceiling tile, white, left to right fissure

ATC collected three samples (ATC samples MAFB-R-33 to MAFB-R-35) from the ceiling tiles of the women's locker room. This material was observed in good, non-friable condition and no asbestos was detected in these samples**.**

2'x 4' Ceiling tile, gray, rough texture, foil back

ATC collected three samples (ATC samples MAFB-R-36 to MAFB-R-38) from the ceiling in west half of cardio training area. This material was observed in good, non-friable condition and no asbestos was detected in these samples**.**

2'x 4' Ceiling tile, white, small lengthwise fissure

ATC collected three samples (ATC samples MAFB-R-39 to MAFB-R-41) from the ceiling tiles located in the office and east half of cardio training area. This material was observed in good, non-friable condition and no asbestos was detected in these samples**.**

Gray base-cove adhesive

ATC collected one sample (ATC sample MAFB-R-42) of the base cove adhesive located in the office and the east half of the cardio exercise room. This material was observed in good, non-friable condition and no asbestos was detected in the sample.

Taupe base-cove adhesive

ATC collected one sample (ATC sample MAFB-R-43) of base-cove adhesive in the racquetball area hallway. This material was observed in good, non-friable condition and no asbestos was detected in the sample.

Rubber floor adhesive

ATC collected one sample (ATC sample MAFB-R-44) from the adhesive below the rubber floor in the men's locker room. This material was observed in good, non-friable condition and no asbestos was detected in the sample.

Racquetball floor core

ATC collected one sample (ATC sample MAFB-R-45) of the floor system (including hardwood, plywood sub-floor, vapor barrier) from the western most racquetball court. This material was observed in good, non-friable condition and no asbestos was detected in the sample.

Hardwood floor, rubber under-layment adhesive

ATC collected one sample (ATC sample MAFB-R-46) of the rubber under-layment adhesive in the middle gym. This material was observed in good, non-friable condition and no asbestos was detected in the sample.

Dark brown base-cove adhesive

ATC collected one sample (ATC sample MAFB-R-47) of the brown base-cove adhesive located in the middle gym. This material was observed to be in good condition and no asbestos was detected in the sample.

Structural fireproofing material

ATC collected three samples (ATC samples MAFB-R-48 to MAFB-R-50) of fireproofing material from the north mechanical room. This material was observed to be in good, non-friable condition and no asbestos was detected in these samples.

Roofing Materials

The roofing materials observed at the site on all of the buildings appeared to be metal.

Demolition Areas

Miscellaneous Materials

Rubber floor (running track)

ATC collected one sample (ATC sample MAFB-D-1) of rubber track material from the south portion of the gymnasium. This material was observed in good, non-friable condition and no asbestos was detected in this sample**.**

Rubber floor adhesive, tan

ATC collected three samples (ATC samples MAFB-D-2 to MAFB-D-4) of adhesive from below the rubber running track in the south gymnasium. This material was observed in good condition and no asbestos was detected in these samples**.**

Hardwood floor shock absorber, white

ATC collected three samples (ATC samples MAFB-D-5 to MAFB-D-7) from below the hardwood floor in the south gymnasium. This material was observed in good condition and no asbestos was detected in these samples**.**

2'x 4' Ceiling tile, white, lengthwise fissure

ATC collected three samples (ATC samples MAFB-D-8 to MAFB-D-10) from the north gym (youth center), upper mezzanine ceiling. This material was observed in good condition and no asbestos was detected in these samples**.**

2'x 4'ceiling tile, white, random small fissure

ATC collected three samples (ATC samples MAFB-D-11 to MAFB-D-13) from the north gym (youth center), upper mezzanine ceiling. This material was observed in good condition and no asbestos was detected in these samples**.**

2'x 4'ceiling tile, white, rectangle recessed pattern

ATC collected three samples (ATC samples MAFB-D-14 to MAFB-D-16) from the north gym (youth center), upper mezzanine ceiling. This material was observed in good condition and no asbestos was detected in these samples**.**

2'x 4'Ceiling tile, white, left to right fissure

ATC collected three samples (ATC samples MAFB-D-17 to MAFB-D-19) from the north gym (youth center), lower mezzanine ceiling. This material was observed in good condition and no asbestos was detected in these samples**.**

12"x12" Green floor tile with clear mastic

ATC collected three samples (ATC samples MAFB-D-20 to MAFB-D-22) of green floor tile adhered to wood flooring from the north gym (youth center), upper mezzanine. **Asbestos was detected in these samples, but does not need to be removed under NESHAP regulations for demolition.**

12"x12" White with cream tint floor tile and clear mastic

ATC collected three samples (ATC samples MAFB-D-23 to MAFB-D-25) from floor of the maintenance closet of the north gym (youth center). This material was observed in good condition and no asbestos was detected in these samples**.**

Sheetrock composite.

ATC collected seven samples (ATC samples MAFB-D-26 to MAFB-D-32) from the north gym (youth center) walls and ceilings. This material was observed in good condition and no asbestos was detected in these samples**.**

Maroon base-cove adhesive.

ATC collected one sample (ATC sample MAFB-D-34) from the base cove of the front entry of the north gym (youth center). This material was observed in good condition and no asbestos was detected in the sample**.**

Sink undercoating

ATC collected one sample (ATC sample MAFB-D-33) from the sink located in the front entry of the north gym (youth center). No asbestos was detected in the kitchen sink-undercoating sample.

HVAC fabric isolation joints

The Hall-Kimbrell personnel had identified and sampled fabric isolation joints from locations within the survey area previously and were found to contain asbestos. **ATC observed an isolation joint fabric in the suspended heating unit in the south gymnasium. This material was consistent with the fabric identified by Hall-Kimbrell as being identified as asbestos containing.**

5.0 MERCURY CONTAINING EQUIPMENT AND MATERIALS

The following table summarizes site observations and interviews. Affirmative responses (designated by an "X") are discussed in more detail following the table.

Mercury	
Mercury is a heavy, shiny, silvery-white poisonous metal that is a liquid at room temperature. Mercury can be found in thermometers, barometers, thermostats, dental offices, blood-pressure devices, and fluorescent and other types of light bulbs. Liquid mercury evaporates at room temperature and gives off harmful, invisible, odorless vapors. Breathing these vapors causes the most harm to people, but mercury can also be harmful when swallowed or when it contacts broken skin. Mercury is quite toxic: it causes birth defects and works its way into the food chain. Women and children are most at risk from mercury poisoning, which can cause brain and nerve damage resulting in impaired coordination, blurred vision, tremors, irritability and memory loss. Mercury is a fast-moving liquid that spreads quickly. Prompt containment and control of both the liquid and its vapors is very important. In general, do not remove the mercury from a device such as a switch. Keep the product intact and remove and store in a covered container in a manner that will prevent breakage, spillage, or release. Label and store the mercury containing devices to ensure proper handling and disposal.	
☐	Sink Traps in Schools or locations that used free mercury or analytical thermometers
☐	Hospital Devices/Equipment
Batteries:	
☒	**Smoke Detectors: Throughout all areas**
☐	Emergency Lighting Systems:
☐	Elevator Control Panels:
☐	Exit Signs:
☒	Security systems and Alarms:
Lighting:	
☒	**Fluorescent Lights: Throughout all areas**
☐	High Intensity Discharge:
☐	Metal Halide:
☐	High Pressure Sodium:
☐	Mercury Vapor:
☐	Neon:
☐	Switches for lighting using mercury relays: look for any control associated with exterior or automated lighting systems:
☐	"Silent" Wall Switches:

Mercury	
Heating, Ventilating, and Air Conditioning Systems:	
☒	**Thermostats: Throughout all areas**
☐	Aquastats:
☐	Pressurestats:
☐	Firestats:
☐	Manometers:
☐	Thermometers:
Boilers, Furnaces, Heaters & Tanks:	
☒	**Mercury Flame Sensors by pilot lights: both furnace and water heaters throughout all areas**
☒	**Manometers, Thermometers, Gauges: thermometer observed in north mechanical room**
☐	Pressure-trol:
☐	Float or Level Controls:
☐	Space Heater Controls:
Electrical Systems:	
☐	Load Meters and Supply Relays:
☐	Phase Splitters:
☐	Microwave Relays:
☐	Mercury Displacement Relays:
Other Industrial Equipment and Areas of Mercury Concern:	
☐	Any control used for measurement of vacuum, pressure, fluid level, temperature, or flow-rate
☐	Other switches may have been used in old clocks, water cleaning systems, pneumatic control switches, and other areas.
☒	**Running Track located in south gymnasium**
☐	It is the expectation of the EPA that all equipment control boxes and panels be examined for mercury containing devices prior to demolition.
☐	

ATC observed a rubber indoor running track in the south gymnasium scheduled for demolition. ATC has on previous experiences determined that the process of manufacturing this type or similar floor has contaminated the product with mercury. ATC sampled the floor and submitted the samples for analysis via Method 7471A, Mercury in solid or semi-solid waste (Manual Cold Vapor Technique), consistent with Resource Conservation & Recovery Act Regulation (RCRA). The analysis detected mercury in the rubber flooring at a concentration of 1.1 micrograms per kilogram. The EPA defines Low Mercury Wastes as those wastes with mercury concentrations below 260 micrograms per kilogram. ATC contacted the North Dakota Solid Waste Division (701) 328-5166 and spoke with Mr. Robert Disney. Mr. Disney indicated that this material would not be considered a hazardous waste by the State of North Dakota solid waste regulations. Mr. Disney however, strongly recommended removing this material and disposing of the track independent of the demolition waste stream. The Solid Waste Division of North Dakota strongly recommends recycling as much of the demolition waste as possible. By removing this flooring, the recycling of

the concrete slab below would be achievable. Additionally, ATC recommends removal and disposal in an approved synthetically lined subtitle D landfill. The profile of the waste indicates a low concentration of mercury. ATC has conducted an investigation concerning landfills proximal to the site that would accept this material. The closest landfill identified by ATC was the Waste Management Inc. landfill located in McDaniel, North Dakota. This landfill is approximately 30 miles from the Minot AFB. Waste Management, Inc. indicated verbally that based on the sampling results they would accept the track material at this landfill upon completion of a material profile analysis. Waste Management, Inc. indicated that the waste disposal cost would be $30/ton plus the $75.00 profiling fee. This is a preliminary estimate and does not constitute an offer by any party for the purposes of contract. This landfill disposal estimate is being provided as an example and ATC recommends that the AFB select a landfill that meets their specifications and contract requirements

ATC observed mercury ampoule containing thermostats throughout the renovation and demolition areas. Additionally mercury vapor lamps were observed in all three gymnasiums. The TPMG has indicated that these lamps will be removed by them prior to demolition/renovation activities.

6.0 POLYCHLORINATED BIPHENYL (PCBS) CONTAINING EQUIPMENT

The following table summarizes site observations and interviews. Affirmative responses (designated by an "X") are discussed in more detail following the table.

Polychlorinated BiPhenyls (PCBs)	
PCBs are a family of chlorinated compounds that were dielectric or especially non-conductive. PCBs are oily liquids that are usually pale yellow to clear. PCBs are a family of chemicals manufactured and used in the United States until the late 1970's, which were mostly used in electrical devices like capacitors, transformers and lighting ballasts to protect their oils from breaking down at high temperatures. These substances are strictly regulated because of their toxicity and persistence in the environment. PCBs continue to be a major source of fish contamination, leading to fish consumption advisories for people. Management of PCBs is based on their concentration in an item. Materials with PCB concentrations of 50 parts per million (ppm) or greater are regulated by the U.S. EPA under the Toxic Substances Control Act.	
☐	Sumps or Oil traps (industrial facilities)
☒	Transformers: TPMG advised these were recycled during last phase of renovation
☐	Transistors:
☒	**Capacitors (old appliances, electronic equipment): Throughout all areas**
☐	Heat Transfer Equipment:
☒	**Light Ballasts: Throughout all areas**

Several types of switch and diode containing equipment were observed throughout the survey area. Computer equipment, carbon monoxide detectors, smoke detectors and sundry alarms were present and may contain PCB containing components. ATC observed fluorescent bulb lights in the buildings and observed ballasts and starters associated with these lights. No labeling was conclusive as to PCB content was observed on the ballasts observed. The TPMG has indicated that these lamps will be removed by them prior to demolition/renovation activities.

7.0 LEAD BASED PAINT AND LEAD BUILDING MATERIALS

Based on the commentary made by the TPMG that no lead paint sampling has been conducted previously, ATC sampled for lead based paint (LBP) to satisfy the Hazardous Material Survey of the Minot AFB Fitness Center.

The following table summarizes site observations and interviews. Affirmative responses (designated by an "X") are discussed in more detail following the table.

Lead	
Lead and lead based paint (LPB) are common items in many older buildings. The use of LPB was discontinued in 1978; however, many buildings have multiple layers of paint and should be examined carefully. Lead can be found in the following areas:	
☒	Lead Based Paint: (woodwork, metal equipment, interior/exterior uses)
☒	Lead-Acid Batteries: (lighting, exit signs security systems)
☒	**Lead flashing molds and roof vents: Throughout all areas**
☐	Lead Pipes and solder:

The following section describes LBP sample collection locations and lead containing building material observations.

Potential Lead Containing Building Materials

ATC observed from a distance metal roof penetrations located in the north and south gyms that appeared indicative of sheet metal flashings that contain lead. ATC recommends removing these flashings and recycling prior to demolition.

Lead Based Paint

Renovation Areas

Painted walls.

ATC collected one paint chip sample (ATC sample MAFB-LBP-1) of light green paint representative of the middle gym walls. The painted walls of the gym were observed to be in good condition and no lead was detected in this sample.

Painted material.

ATC collected one paint chip sample (ATC sample MAFB-LBP-2) of light green paint representative of the middle gym mechanical system covers. The painted system covers were observed to be in good condition and no lead was detected in this sample.

Painted material.

ATC collected one paint chip sample (ATC sample MAFB-LBP-3) of white paint from the middle gym wood door build outs designed to protect perimeter piping and insulation from sports activities. ATC observed the paint on the wood door build outs to be in good condition and no lead was detected in this sample.

Painted walls.

ATC collected one paint chip sample (ATC sample MAFB-LBP-4) of light green paint representative of the nautilus portion of the weight training area hard wood walls. ATC observed the paint to be in good condition and no lead was detected in this sample.

Painted decking

ATC collected one paint chip sample (ATC sample MAFB-LBP-6) of orange paint from the locker room roof deck. ATC observed this painted surface to be in poor, peeling condition. This same paint was observed on the roof decking of the middle gymnasium, which was also in a poor, peeling condition. **Lead was detected in this sample at a concentration of 89.97 % by weight. OSHA will require stabilization of this paint by trained, qualified persons prior to renovation activities. The observed damage is approximately 1,200 square feet in the locker rooms and**

locker room hallway. The observed damage in the middle gymnasium is approximately 200 square feet.

Demolition Areas

Painted walls

ATC collected one paint chip sample (ATC sample MAFB-LBP-5) of off-white paint representative of the south gym walls. The painted walls appeared to be in slightly damaged condition and no lead was detected in this sample.

Painted doorframes

ATC collected one paint chip sample (ATC sample MAFB-LBP-7) of dark brown paint representative of the metal doorframes in the north gym. The painted doorframes appeared to be in good condition and no lead was detected in this sample.

Painted walls

One paint chip sample (ATC samples MAFB-LBP-8) was collected from white paint representative of the walls and ceiling in the youth center gym. The painted surfaces appeared to be in good condition and no lead was detected in this sample.

8.0 CHLOROFLUOROCARBONS

The following table summarizes site observations and interviews. Affirmative responses (designated by an "X") are discussed in more detail following the table.

ChloroFluoroCarbons	
CFCs (chlorofluorocarbons) and HCFCs (hydrochlorofluorocarbons) are man-made refrigerants that destroy the ozone layer. Federal laws also prohibit releases and also require recovery of these substances, as well as other refrigerants that are global warming gases or pose other health or environmental problems. They must be properly recovered, using approved equipment operated by qualified technicians. The entity recovering these refrigerants must be registered with the DNR and supply documentation to whomever receives the scrapped equipment that the refrigerants were properly removed.	
☒	**Fire Extinguishers** (both **portable** and installed halon suppression systems) **Throughout all areas**
☒	**Air Conditioners** (rooftop, **room**, and central) **front of north gym at entrance**
☐	Walk in Coolers (refrigeration or cold storage areas)
☐	Water Fountains and Dehumidifiers:
☒	**Refrigerators**/Freezers/Chillers: **front of north gym entrance**
☐	Heat Pumps:
☐	Halon Containing Fire Extinguishers
☐	Vending Machines/Food Display Cases:

9.0 OTHER

The following table summarizes site observations and interviews. Affirmative responses (designated by an "X") are discussed in more detail following the table.

Other	
☒	**Solid Waste** (**all non-building components such as files, books, trash, desks, chairs, etc.) must be removed prior to demolition. Throughout all units**
☐	Pesticides or Fertilizers: must be properly handled and disposed of prior to demolition.
☐	**Open Burning**: It is illegal to burn unwanted buildings in most states. Most state laws prohibit the burning of painted, treated or unclean wood, asphalt, plastics of any kind, oily substances, tires and other rubber products, wet rubbish and other materials. In the case of building demolition, that would include roofing materials, all kinds of flooring materials, insulation, plywood and other composition board, electrical wiring, cabinetry and countertops, and plastic plumbing.
☒	**Hazardous Waste:** (all HW including household HW) must be properly handled and disposed of prior to demolition.
☒	**Appliances: May contain ozone-depleting or other regulated refrigerants; PCB-containing capacitors or ballasts; or mercury; and must be processed by an appliance de-manufacturer. Throughout all units**
☐	**Well Abandonment:** Unused and improperly abandoned wells are a significant threat to groundwater quality. If not properly filled, abandoned wells can directly channel contaminated surface or soil water into groundwater. State laws typically require that any wells or boreholes be properly filled prior to any demolition or construction work on the property.
☒	**Computers: May contain hazardous materials such as lead, cadmium, chromium, and mercury**

Other	
	and may be regulated as hazardous wastes if not recycled. Throughout all units
☐	**Oil: (used oil, hydraulic oils in door closers, elevator shafts, etc) must be collected and properly disposed of prior to demolition.**
☐	**Soil Contamination**: visual indications or documented soil contamination at the site.
☐	**Exit Signs**: Many self-luminous exit signs contain significant amounts of radioactive tritium. All self-luminous exit signs are required to have a permanent label affixed to the sign that identifies it as containing radioactive material. In addition, the label will include the name of the manufacturer, the product model number, the serial number, and the quantity of tritium contained. It is illegal to abandon or dispose of these signs except by transferring them to the manufacturer or others licensed by the U.S. Nuclear Regulatory Commission to accept them.
☐	**Tanks:** visual indications of former heating tanks or storage tanks exists

This checklist does not represent an exhaustive listing of types of materials that may be required to be removed from a building prior to demolition.

ATC observed household related hazardous materials to include paint cans, cleaning products, and appliances in the north gymnasium and associated mezzanine area. ATC did not document and list these items specifically because the TPMG indicated that they would be managing the removal and disposal of these items prior to demolition/renovation.

The remaining items in the "Other" category will be identified and removed by TPMG staff prior to demolition and renovation activities.

10.0 FINDINGS AND CONCLUSIONS

ATC has identified the following items at the Minot AFB Fitness Center that require removal or stabilization prior to demolition and renovation activities:

- Approximately 2,500 linear feet of asbestos containing pipe insulation
- Approximately 500 asbestos containing pipe fitting insulation joints
- All HVAC isolation joints
- All mercury ampoule thermostats associated with the HVAC system and water heaters
- All smoke/ carbon monoxide detectors and alarms
- All fluorescent bulbs
- All light ballasts and starters
- All appliances
- All water heaters
- All forced air furnaces
- All window mounted air conditioners
- All paint/ solvent cans, cleaning solvents
- Stabilize lead based paint observed to be in poor condition that was associated with roof decking in the men's locker room and middle gym
- Rubber running track from south gymnasium and dispose of as mercury containing hazardous material despite interpretation that states that the material is not.
- Potential lead containing roof flashing
- Batteries associated with emergency lighting

Renovation/Demolition

The friable ACMs, specifically the pre-formed magnesia pipe and pipe fitting insulation in the locker rooms, locker room hallways, weight training areas, south gymnasium, middle gymnasium, and north, east and south mechanical rooms, identified in this report are recommended for removal by North Dakota licensed personnel in accordance with applicable regulations, prior to building renovation and or demolition.

ACM present at the site that does not require removal prior to demolition includes the approximately 1,800 feet of green floor tile located in the upper mezzanine of the north gymnasium.

Subcontractors and employees working within the structures at the site should be made aware of the locations of the ACMs and the possibility of concealed ACMs that could be found during renovation and or demolition activities.

The following recommendations should be followed for demolition projects including contracting the services of an environmental consultant to monitor/document that the demolition contractor activities comply with the North Dakota Department of Health, OSHA, EPA, and NESHAP requirements.

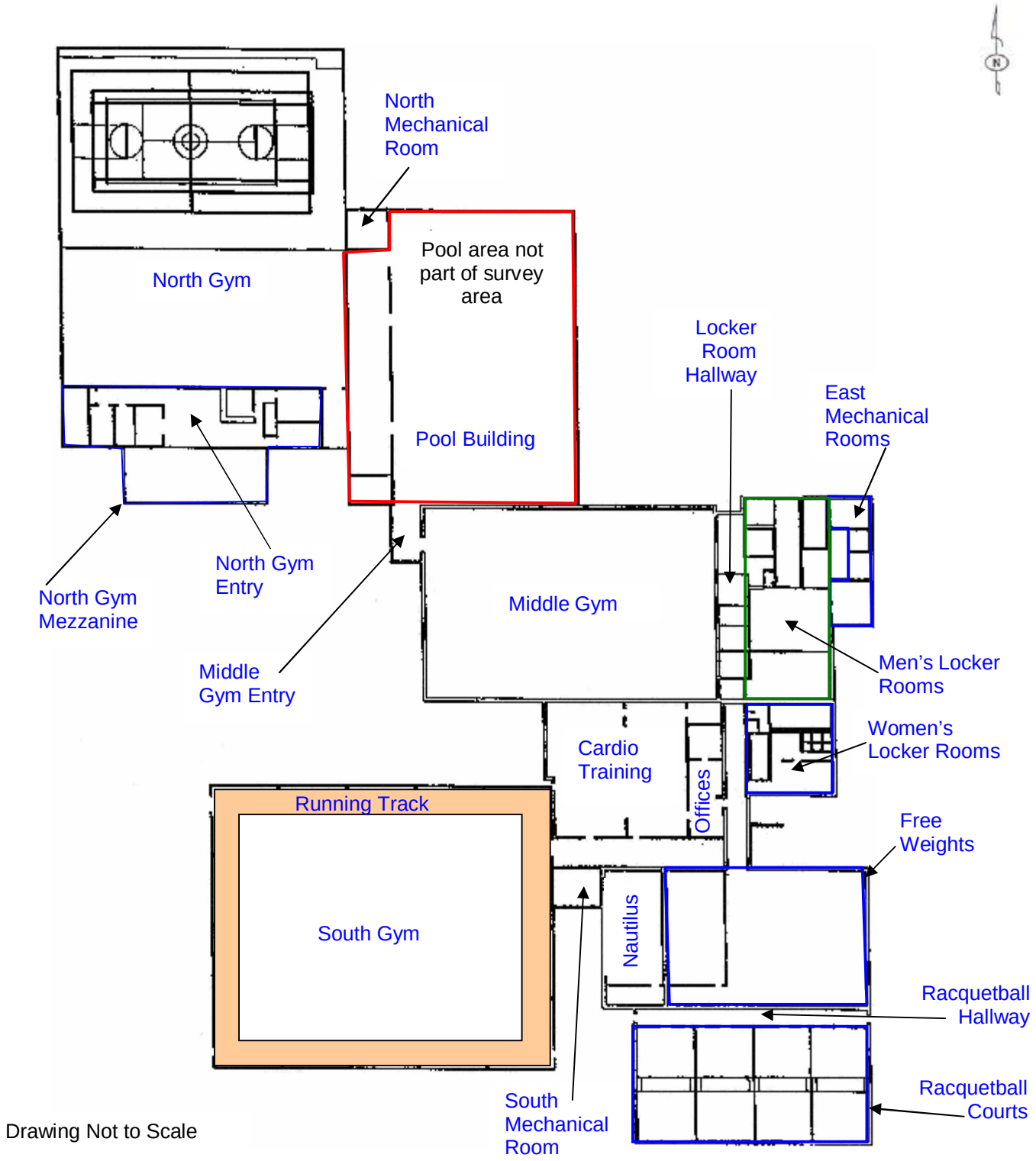
- When demolition by toppling occurs, adequate wetting shall be employed to suppress the dust and reasonable enclosures for dust emission control (as compatible with the building character) shall be employed.
- The non-friable ACMs shall not be subjected to abrasion, grinding, sanding or any other processes during demolition, which will render these non-friable materials friable.
- Non-friable ACM debris dislodged during demolition can be disposed off site in a sanitary landfill that accepts asbestos-containing demolition/construction debris wastes within the framework of local/state regulations.
- Non-friable ACM debris mixed with demolition debris should not be used as fill material on-site nor should it be sold/given away to others for the same use.
- If the demolition contractor changes the means and methods of demolition and the environmental consultant is of the opinion that the Category I non-friable materials are being made friable, or if visible dust emissions are generated, the work should be stopped. In these situations, revised notification for removal of non-friable ACM may become necessary and the removal work will then need to be performed by a North Dakota licensed abatement contractor.

11.0 ASSUMPTIONS AND LIMITATIONS

The results, findings, conclusions, and recommendations expressed in the report are based only on conditions that were noted during the March 23 through March 25, 2004, ATC Hazardous Material Survey of the Minot AFB Fitness Center in Minot, North Dakota.

Any conditions or materials that could not be visually identified on the surface were not inspected and may differ from those conditions or materials noted. It was not within the scope of the survey to remove surface materials to investigate portions of the structure or materials that lay beneath the surface. ATC selection of sample locations and frequency of sampling was based on ATC observations and the assumption that like materials in the same area are homogeneous in content.

The report is designed to aid the building owner, architect, construction manager, general contractors, and potential asbestos abatement contractors in locating hazardous materials to be removed prior to **demolition/ renovation** activities.

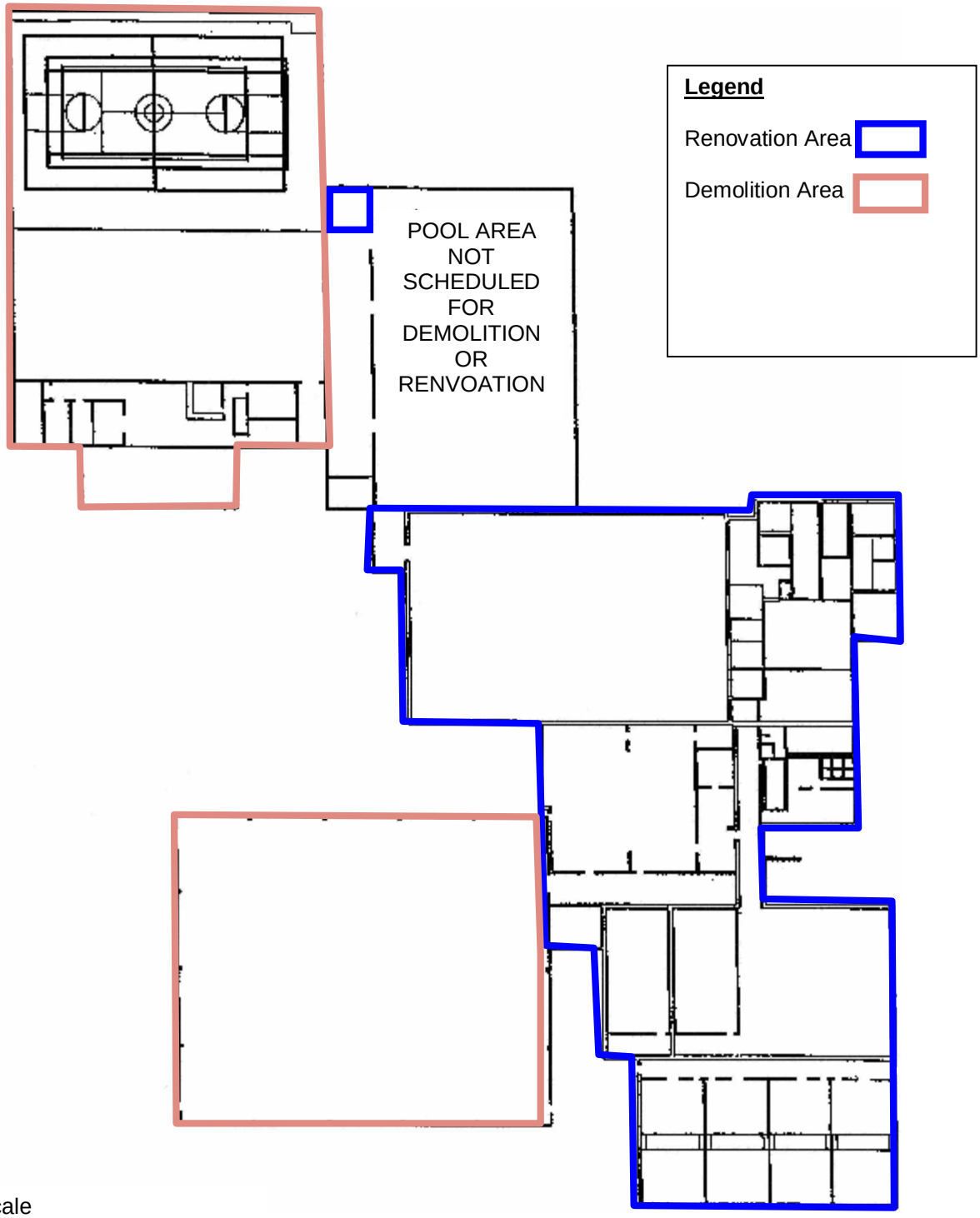


ATC ASSOCIATES INC. 1929 County Road C2 West Roseville, Minnesota 55113		
PROJECT NO: 22.23633.0003		
DESIGNED BY: ATC	SCALE:UNK	REVIEWED BY: JRB
DRAWN BY: BLM	DATE:May 4, 2004	FILE: Drawing

Site Sketch

FIGURE 1

MINOT AIR FORCE BASE
PLANNED RENOVATION/DEMOLITION
FITNESS CENTER
MINOT, NORTH DAKOTA



Not to Scale

ATC ASSOCIATES INC.

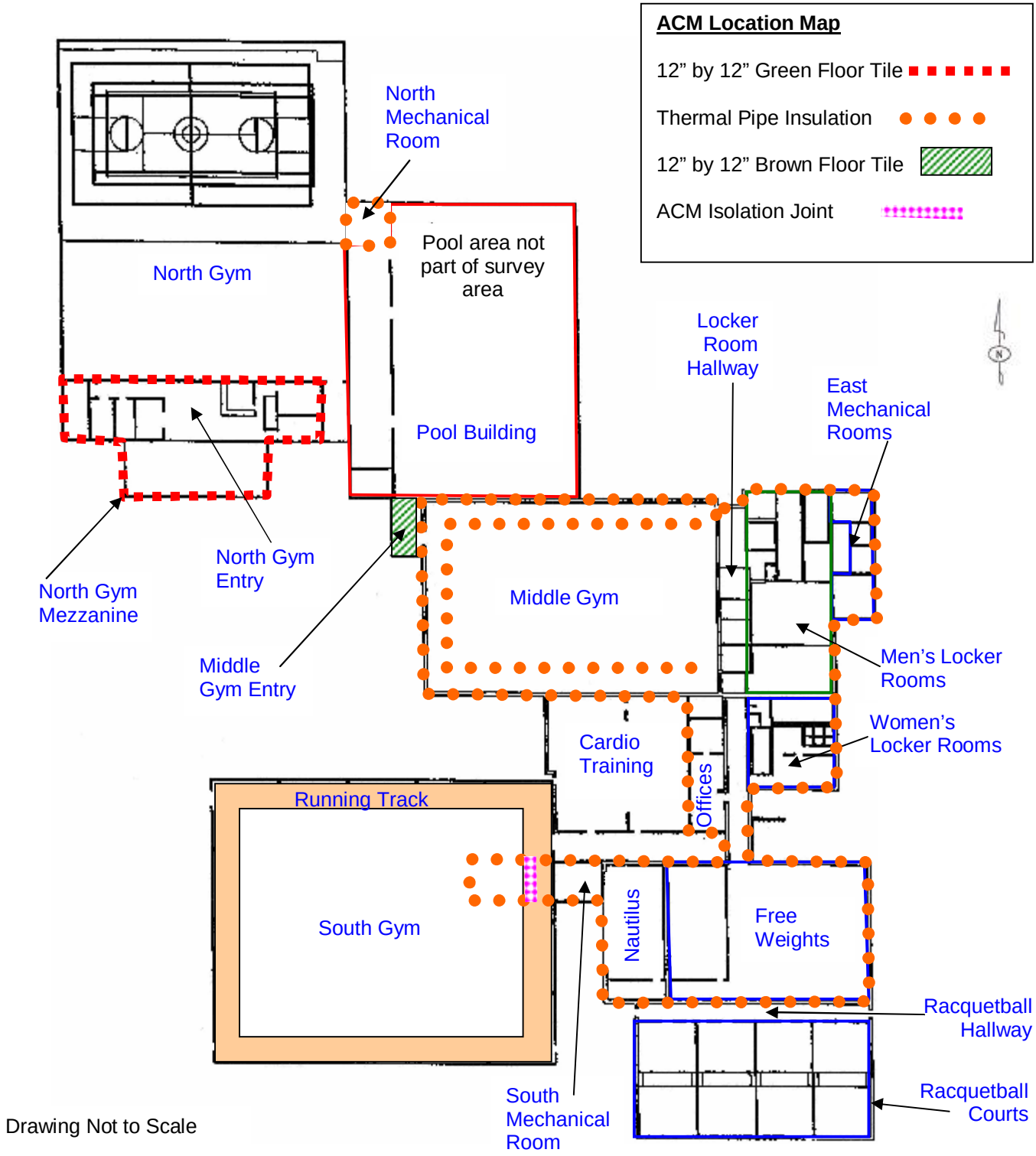
1929 County Road C2 West
Roseville, Minnesota 55113

PROJECT NO: 22.23633.0003		
DESIGNED BY: ATC	SCALE:UNK	REVIEWED BY: JRB
DRAWN BY: BLM	DATE:May 4, 2004	FILE: Drawing

Demolition/Renovation Map

FIGURE 2

MINOT AIR FORCE BASE
PLANNED RENOVATION/DEMOLITION
FITNESS CENTER
MINOT, NORTH DAKOTA



ATC ASSOCIATES INC.
1929 County Road C2 West
Roseville, Minnesota 55113

PROJECT NO: 22.23633.0003		
DESIGNED BY: ATC	SCALE:UNK	REVIEWED BY: JRB
DRAWN BY: BLM	DATE:May 4, 2004	FILE: Drawing

IDENTIFIED MATERIALS MAP

FIGURE 3

MINOT AIR FORCE BASE
PLANNED RENOVATION/DEMOLITION
FITNESS CENTER
MINOT, NORTH DAKOTA

A P P E N D I X A

Bulk Material Sampling Laboratory Reports

8985 E. Nichols Avenue, Suite 350
Centennial, CO 80112
www.atc-enviro.com
303.799.6100
Fax 303.799.3441

PLM REPORT SUMMARY

NVLAP Lab Code 102031
AIHA Lab Code 101536

Client:

John Bissen
ATC Associates Inc.-Roseville
1929 County Road C-2 West
Roseville MN 55113

Project: Minot Air Force Base/Fitness Center Demolition
Client Project No.: 22.23633.0003
Identification: N/A
Test Method: EPA Method 600/M4-82-020; 600/R-93/116

ATC Job No.: **35.90735.2232A**
Batch No.: 0005324
Report Date: 03/31/2004
Sample Date: 03/23/2004
Date Analyzed: 03/31/2004

Client No.	Lab No.	Sample Description / Location	Asbestos Content
MAFB-D-1	0005324-001	Rubber Floor, Brown South Gym	None Detected
MAFB-D-2	0005324-002	Adhesive, Tan South Gym	None Detected
MAFB-D-3	0005324-003	Adhesive, Tan South Gym	None Detected
MAFB-D-4	0005324-004	Adhesive, Tan South Gym	None Detected
MAFB-D-5	0005324-005	Hard Wood Shock Absorber, White South Gym	None Detected
MAFB-D-6	0005324-006	Hard Wood Shock Absorber, White South Gym	None Detected
MAFB-D-7	0005324-007	Hard Wood Shock Absorber, White South Gym	None Detected
MAFB-D-8	0005324-008	2'x4' Ceiling Tile, White, Length Wise Fiss. Youth Center, Upper Mezzanine	None Detected
MAFB-D-9	0005324-009	2'x4' Ceiling Tile, White, Length Wise Fiss. Youth Center, Upper Mezzanine	None Detected

These samples were analyzed by layers. Specific layer or component asbestos content is indicated when relevant. The EPA considers a material to be asbestos containing only if it contains more than one percent asbestos by Calibrated Visual Area Estimation (CVAE). EPA regulations also indicate that Regulated Asbestos Containing Materials (RACM) -- materials which are friable or may become friable -- be further analyzed by point counting when the results indicate less than ten percent asbestos by CVAE. Our laboratory utilizes CVAE on a routine basis and does not include point counting unless specifically requested. The results may not be reproduced except in full, and should not be used as a scope of work for abatement without consulting with ATC.

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PLM REPORT SUMMARY

NVLAP Lab Code 102031
AIHA Lab Code 101536

Client:

John Bissen
ATC Associates Inc.-Roseville
1929 County Road C-2 West
Roseville MN 55113

Project: Minot Air Force Base/Fitness Center Demolition
Client Project No.: 22.23633.0003
Identification: N/A
Test Method: EPA Method 600/M4-82-020; 600/R-93/116

ATC Job No.: **35.90735.2232A**
Batch No.: 0005324
Report Date: 03/31/2004
Sample Date: 03/23/2004
Date Analyzed: 03/31/2004

Client No.	Lab No.	Sample Description / Location	Asbestos Content
MAFB-D-10	0005324-010	2'x4' Ceiling Tile, White, Length Wise Fiss. Youth Center, Upper Mezzanine	None Detected
MAFB-D-11	0005324-011	2'x4' Ceiling Tile, White, Random Small Fiss. Youth Center, Upper Mezzanine	None Detected
MAFB-D-12	0005324-012	2'x4' Ceiling Tile, White, Random Small Fiss. Youth Center, Upper Mezzanine	None Detected
MAFB-D-13	0005324-013	2'x4' Ceiling Tile, White, Random Small Fiss. South Gym	None Detected
MAFB-D-14	0005324-014	2'x4' Ceiling Tile, White,Rec. Pattern Youth Center, Upper Mezzanine	None Detected
MAFB-D-15	0005324-015	2'x4' Ceiling Tile, White,Rec. Pattern Youth Center, Upper Mezzanine	None Detected
MAFB-D-16	0005324-016	2'x4' Ceiling Tile, White,Rec. Pattern Youth Center, Upper Mezzanine	None Detected
MAFB-D-17	0005324-017	2'x4' Ceiling Tile, White, Left to Right Fiss. Youth Center, Upper Mezzanine	None Detected
MAFB-D-18	0005324-018	2'x4' Ceiling Tile, White, Left to Right Fiss. Youth Center, Upper Mezzanine	None Detected

These samples were analyzed by layers. Specific layer or component asbestos content is indicated when relevant. The EPA considers a material to be asbestos containing only if it contains more than one percent asbestos by Calibrated Visual Area Estimation (CVAE). EPA regulations also indicate that Regulated Asbestos Containing Materials (RACM) -- materials which are friable or may become friable -- be further analyzed by point counting when the results indicate less than ten percent asbestos by CVAE. Our laboratory utilizes CVAE on a routine basis and does not include point counting unless specifically requested.

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ATC Job No.: **35.90735.2232A**
Batch No.: 0005324
Report Date: 03/31/2004
Sample Date: 03/23/2004
Date Analyzed: 03/31/2004

Client No.	Lab No.	Sample Description / Location	Asbestos Content
MAFB-D-19	0005324-019	2'x4' Ceiling Tile, White, Left to Right Fiss. Youth Center, Upper Mezzanine	None Detected
MAFB-D-20	0005324-020	LAYER# 1 12"x12" Floor Tile, Green Youth Center, Upper Mezzanine	Chrysotile 2%
MAFB-D-20	0005324-020	LAYER# 2 Mastic, Clear Youth Center, Upper Mezzanine	None Detected
MAFB-D-21	0005324-021	12"x12" Floor Tile, Green Note: Sample Not Analyzed Youth Center, Upper Mezzanine	
MAFB-D-22	0005324-022	12"x12" Floor Tile, Green Note: Sample Not Analyzed Youth Center, Upper Mezzanine	
MAFB-D-23	0005324-023	LAYER# 1 12"x12" Floor Tile, White Maintenance Closet	None Detected
MAFB-D-23	0005324-023	LAYER# 2 Mastic, Clear Maintenance Closet	None Detected

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Test Method: EPA Method 600/M4-82-020; 600/R-93/116

ATC Job No.: **35.90735.2232A**
Batch No.: 0005324
Report Date: 03/31/2004
Sample Date: 03/23/2004
Date Analyzed: 03/31/2004

Client No.	Lab No.	Sample Description / Location	Asbestos Content
MAFB-D-24	0005324-024	LAYER# 1 12"x12" Floor Tile, White Maintenance Closet	None Detected
MAFB-D-24	0005324-024	LAYER# 2 Mastic, Clear Maintenance Closet	None Detected
MAFB-D-25	0005324-025	LAYER# 1 12"x12" Floor Tile, White Maintenance Closet	None Detected
MAFB-D-25	0005324-025	LAYER# 2 Mastic, Clear Maintenance Closet	None Detected
MAFB-D-26	0005324-026	LAYER# 1 Joint Compound, White Gym Ceiling	None Detected
MAFB-D-26	0005324-026	LAYER# 2 Drywall, White/ Tan Gym Ceiling	None Detected
MAFB-D-27	0005324-027	LAYER# 1 Joint Compound, White Gym Ceiling	None Detected

These samples were analyzed by layers. Specific layer or component asbestos content is indicated when relevant. The EPA considers a material to be asbestos containing only if it contains more than one percent asbestos by Calibrated Visual Area Estimation (CVAE). EPA regulations also indicate that Regulated Asbestos Containing Materials (RACM) -- materials which are friable or may become friable -- be further analyzed by point counting when the results indicate less than ten percent asbestos by CVAE. Our laboratory utilizes CVAE on a routine basis and does not include point counting unless specifically requested. The results may not be reproduced except in full, and should not be used as a scope of work for abatement without consulting with ATC.

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ATC Job No.: **35.90735.2232A**
Batch No.: 0005324
Report Date: 03/31/2004
Sample Date: 03/23/2004
Date Analyzed: 03/31/2004

Client No.	Lab No.	Sample Description / Location	Asbestos Content
MAFB-D-27	0005324-027	LAYER# 2 Drywall, White/ Tan Gym Ceiling	None Detected
MAFB-D-28	0005324-028	LAYER# 1 Joint Compound, White Gym Ceiling	None Detected
MAFB-D-28	0005324-028	LAYER# 2 Drywall, White/ Tan Gym Ceiling	None Detected
MAFB-D-29	0005324-029	LAYER# 1 Joint Compound, White Gym Ceiling	None Detected
MAFB-D-29	0005324-029	LAYER# 2 Drywall, White/ Tan Gym Ceiling	None Detected
MAFB-D-30	0005324-030	LAYER# 1 Joint Compound, White Gym Ceiling	None Detected
MAFB-D-30	0005324-030	LAYER# 2 Drywall, White/ Tan Gym Ceiling	None Detected

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ATC Job No.: **35.90735.2232A**
Batch No.: 0005324
Report Date: 03/31/2004
Sample Date: 03/23/2004
Date Analyzed: 03/31/2004

Client No.	Lab No.	Sample Description / Location	Asbestos Content
MAFB-D-31	0005324-031	LAYER# 1 Joint Compound, White Gym Ceiling	None Detected
MAFB-D-31	0005324-031	LAYER# 2 Drywall, White/ Tan Gym Ceiling	None Detected
MAFB-D-32	0005324-032	LAYER# 1 Joint Compound, White Upper Mezzanine	None Detected
MAFB-D-32	0005324-032	LAYER# 2 Drywall, White/ Tan Upper Mezzanine	None Detected
MAFB-D-33	0005324-033	Sink Undercoating, Black Front Entry	None Detected
MAFB-D-34	0005324-034	Cove Base Mastic, Tan Front Entry	None Detected

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Identification: N/A
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ATC Job No.: **35.90735.2232**
Batch No.: 0005323
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Sample Date: 03/23/2004
Date Analyzed: 03/31/2004

Client No.	Lab No.	Sample Description / Location	Asbestos Content
MAFB-R-1	0005323-001	2'x4' Ceiling Tile, White, Cloud Dot Pattern North End of Raquet Ball Courts	None Detected
MAFB-R-2	0005323-002	2'x4' Ceiling Tile, White, Cloud Dot Pattern North End of Raquet Ball Courts	None Detected
MAFB-R-3	0005323-003	2'x4' Ceiling Tile, White, Cloud Dot Pattern North End of Raquet Ball Courts	None Detected
MAFB-R-4	0005323-004	Ceiling Tile Caulk, White Seam on Ceiling Tile in Raquet Ball Courts	None Detected
MAFB-R-5	0005323-005	Cork Floor Material, Brown Raquet Ball Courts	None Detected
MAFB-R-6	0005323-006	2'x4' Ceiling Tile, White, Left to Right Fiss. Throughout Free Weight Area	None Detected
MAFB-R-7	0005323-007	2'x4' Ceiling Tile, White, Left to Right Fiss. Throughout Free Weight Area	None Detected
MAFB-R-8	0005323-008	2'x4' Ceiling Tile, White, Left to Right Fiss. Throughout Free Weight Area	None Detected
MAFB-R-9	0005323-009	2'x4' Ceiling Tile, White, Small Crater Nautilus Machine Weights Area	None Detected

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ATC Job No.: **35.90735.2232**
Batch No.: 0005323
Report Date: 03/31/2004
Sample Date: 03/23/2004
Date Analyzed: 03/31/2004

Client No.	Lab No.	Sample Description / Location	Asbestos Content
MAFB-R-10	0005323-010	2'x4' Ceiling Tile, White, Small Crater Nautilus Machine Weights Area	None Detected
MAFB-R-11	0005323-011	2'x4' Ceiling Tile, White, Small Crater Nautilus Machine Weights Area	None Detected
MAFB-R-12	0005323-012	Sheetrock Wall Texture, White Throughout Free Weight Area, Natutilus Machine	None Detected
MAFB-R-13	0005323-013	Sheetrock Wall Texture, White Throughout Free Weight Area, Natutilus Machine	None Detected
MAFB-R-14	0005323-014	Sheetrock Wall Texture, White Throughout Free Weight Area, Natutilus Machine	None Detected
MAFB-R-15	0005323-015	LAYER# 1 Joint Compound, White Throughout Free Weight Area, Natutilus Machine	None Detected
MAFB-R-15	0005323-015	LAYER# 2 Drywall, White/ Tan Throughout Free Weight Area, Natutilus Machine	None Detected
MAFB-R-16	0005323-016	LAYER# 1 Joint Compound, White Throughout Free Weight Area, Natutilus Machine	None Detected

These samples were analyzed by layers. Specific layer or component asbestos content is indicated when relevant. The EPA considers a material to be asbestos containing only if it contains more than one percent asbestos by Calibrated Visual Area Estimation (CVAE). EPA regulations also indicate that Regulated Asbestos Containing Materials (RACM) -- materials which are friable or may become friable -- be further analyzed by point counting when the results indicate less than ten percent asbestos by CVAE. Our laboratory utilizes CVAE on a routine basis and does not include point counting unless specifically requested.

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Batch No.: 0005323
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Sample Date: 03/23/2004
Date Analyzed: 03/31/2004

Client No.	Lab No.	Sample Description / Location	Asbestos Content
MAFB-R-16	0005323-016	LAYER# 2 Drywall, White/ Tan Throughout Free Weight Area, Natutilus Machine	None Detected
MAFB-R-17	0005323-017	LAYER# 1 Joint Compound, White Throughout Free Weight Area, Natutilus Machine	None Detected
MAFB-R-17	0005323-017	LAYER# 2 Drywall, White/ Tan Throughout Free Weight Area, Natutilus Machine	None Detected
MAFB-R-18	0005323-018	2'x4' Ceiling Texture, White, Rough Texture Raquet Ball Hallway Area	None Detected
MAFB-R-19	0005323-019	2'x4' Ceiling Texture, White, Rough Texture Raquet Ball Hallway Area	None Detected
MAFB-R-20	0005323-020	2'x4' Ceiling Texture, White, Rough Texture Raquet Ball Hallway Area	None Detected
MAFB-R-21	0005323-021	2'x4' Ceiling Tile, White, Granular Texture Main Gym Locker Room Hallway Area	None Detected
MAFB-R-22	0005323-022	2'x4' Ceiling Tile, White, Granular Texture Main Gym Locker Room Hallway Area	None Detected

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ATC Job No.: **35.90735.2232**
Batch No.: 0005323
Report Date: 03/31/2004
Sample Date: 03/23/2004
Date Analyzed: 03/31/2004

Client No.	Lab No.	Sample Description / Location	Asbestos Content
MAFB-R-23	0005323-023	2'x4' Ceiling Tile, White, Granular Texture Main Gym Locker Room Hallway Area	None Detected
MAFB-R-24	0005323-024	2'x4' Ceiling Tile, White, Lg. Random Fiss. Main Gym Locker Room Hallway Area	None Detected
MAFB-R-25	0005323-025	2'x4' Ceiling Tile, White, Lg. Random Fiss. Main Gym Locker Room Hallway Area	None Detected
MAFB-R-26	0005323-026	2'x4' Ceiling Tile, White, Lg. Random Fiss. Main Gym Locker Room Hallway Area	None Detected
MAFB-R-27	0005323-027	2'x2' Ceiling Tile, White, Pin Hole Pattern Men's Locker Room Areas	None Detected
MAFB-R-28	0005323-028	2'x2' Ceiling Tile, White, Pin Hole Pattern Men's Locker Room Areas	None Detected
MAFB-R-29	0005323-029	2'x2' Ceiling Tile, White, Pin Hole Pattern Men's Locker Room Areas	None Detected
MAFB-R-30	0005323-030	Joint Compound, White Locker Room Hallway	None Detected
MAFB-R-31	0005323-031	Joint Compound, White Locker Room Hallway	None Detected

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ATC Job No.: **35.90735.2232**
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Report Date: 03/31/2004
Sample Date: 03/23/2004
Date Analyzed: 03/31/2004

Client No.	Lab No.	Sample Description / Location	Asbestos Content
MAFB-R-32	0005323-032	Joint Compound, White Locker Room Hallway	None Detected
MAFB-R-33	0005323-033	2'x4' Ceiling Tile, Gray, Left to Right Fiss. Women's Locker Room	None Detected
MAFB-R-34	0005323-034	2'x4' Ceiling Tile, Gray, Left to Right Fiss. Women's Locker Room	None Detected
MAFB-R-35	0005323-035	2'x4' Ceiling Tile, Gray, Left to Right Fiss. Women's Locker Room	None Detected
MAFB-R-36	0005323-036	2'x4' Ceiling Tile, Gray, Rough Texture West Half Cardio Area	None Detected
MAFB-R-37	0005323-037	2'x4' Ceiling Tile, Gray, Rough Texture West Half Cardio Area	None Detected
MAFB-R-38	0005323-038	2'x4' Ceiling Tile, Gray, Rough Texture West Half Cardio Area	None Detected
MAFB-R-39	0005323-039	2'x4' Ceiling Tile, White, Sm. Length Wise Fiss. Office & East Half of Cardio Area	None Detected
MAFB-R-40	0005323-040	2'x4' Ceiling Tile, White, Sm. Length Wise Fiss. Office & East Half of Cardio Area	None Detected

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Sample Date: 03/23/2004
Date Analyzed: 03/31/2004

Client No.	Lab No.	Sample Description / Location	Asbestos Content
MAFB-R-41	0005323-041	2'x4' Ceiling Tile, White, Sm. Length Wise Fiss. Office & East Half of Cardio Area	None Detected
MAFB-R-42	0005323-042	Adhesive, Gray Raquet Ball Hall	None Detected
MAFB-R-43	0005323-043	Adhesive, Tan Locker Room & South Gym Hall	None Detected
MAFB-R-44	0005323-044	Adhesive, Tan Men's Locker Room	None Detected
MAFB-R-45	0005323-045	Floor Core, Brown Raquet Ball Hall	None Detected
MAFB-R-46	0005323-046	Adhesive, Brown Middle Gym	None Detected
MAFB-R-47	0005323-047	Adhesive, Tan Middle Gym	None Detected
MAFB-R-48	0005323-048	Fireproofing, Tan Northeast Mechanical Room	None Detected
MAFB-R-49	0005323-049	Fireproofing, Tan Northeast Mechanical Room	None Detected

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Batch No.: 0005323
Report Date: 03/31/2004
Sample Date: 03/23/2004
Date Analyzed: 03/31/2004

Client No.	Lab No.	Sample Description / Location	Asbestos Content
MAFB-R-50	0005323-050	Fireproofing, Tan Northeast Mechanical Room	None Detected

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A P P E N D I X B

Lead Paint Sampling Laboratory Reports

ATC ASSOCIATES INC

104 E. 25th Street, 10th Floor
New York, NY 10010
Tel. 212-353-8280
Fax: 212-353-8306

REPORT DATE:	03/25/04
CLIENT NAME:	ATC - MINNESOTA
PROJECT NAME:	MINOT AIR FORCE BASE
	1929 CO.RD C2 WEST
SAMPLED BY:	Client
SAMPLE DATE:	03/22/04
RECEIVED DATE:	03/25/04
ANALYZED DATE:	03/25/04
SAMPLE MEDIA:	Paint Chips by %
ANALYSIS REQUIRED:	Method EPA 3050/7420

ANALYSIS RESULTS

SAMPLE ID	BATCH NO.	LEAD CONCENTRATION (% by weight)	DETECTION LIMIT (% by weight)
1	28419	<0.02	0.02
2	28419	<0.02	0.02
3	28419	<0.02	0.02
4	28419	<0.02	0.02
5	28419	<0.02	0.02
6	28419	89.97	0.02
7	28419	0.31	0.05
8	28419	<0.01	0.01

NOTE 1:
THE REPORTING LIMIT (RL) IS 0.02%

NOTE 2:
HUD defines lead-based paint as paint having a lead concentration equal to or above 0.5% by weight.
Results preceded by "<" are below the detectable levels by this analysis method.

NOTE 3:

CERTIFICATIONS AND SIGNATURES

ANALYSIS PERFORMED BY: Inna Livshiz

REPORT PREPARED BY: Inna Livshiz

ATC certifies that this report is an accurate and authentic report of results obtained from the laboratory analysis.

QUALITY ASSURANCE COORDINATOR: Mei Wang

LABORATORY DIRECTOR: Milena Lowd

ATC is accredited by the New York State Department of Health Environmental Laboratory Approval Program (ELAP) and by the American Industrial Hygiene Association (AIHA) to perform analysis of lead in paint, dust wipes, air and soil samples. (ELAP #10879), (AIHA #100229).

A P P E N D I X C

Mercury Containing Rubber Flooring Laboratory Report

En Chem Inc.

1241 Bellevue Street
Green Bay, WI 54302
920-469-2436

Analytical Report Number: 845022

Client : ATC ASSOCIATES
Project Name : MINOT AFB
Project Number : 22.23633.0003
Field ID : MAFB-HG-1

Matrix Type : SOLID
Collection Date : 03/22/04
Report Date : 04/13/04
Lab Sample Number : 845022-001

INORGANICS

Test	Result	EQL	Dilution	Units	Code	Anl Date	Prep Method	Anl Method
Mercury	1.1	0.099	10	mg/Kg		04/07/04	SW846 7471A	SW846 7471A

All soil results are reported on a dry weight basis unless otherwise noted.

A P P E N D I X D

Inspector Certifications

Certificate No: 5LM12160310BIR

Expiration Date: December 16, 2004

This is to certify that

John R. Bissen

has attended and successfully completed an

ASBESTOS BUILDING INSPECTOR REFRESHER TRAINING COURSE

permitted by

the State of Minnesota under Minnesota Rules 4620.3702 to 4620.3722

and meets the requirements of

Section 206 of Title II of the Toxic Substances Control Act (TSCA)

conducted by

Lake States Environmental, Ltd.

in

White Bear Lake, MN on December 16, 2003

Examination Date: December 16, 2003

Training Instructor

South Dakota
Department of Environment & Natural Resources

ASBESTOS CERTIFICATION

This is to certify that

John R. Bissen

has successfully completed the appropriate training in accordance with ARSD 74:31 and is certified in South Dakota as an:

? Inspector ? Management Planner ___ Abatement Designer

___ Worker ___ Contractor/Supervisor

Certificate No. 2458 Expiration Date: 12/17/2004

A P P E N D I X E

Regulatory Reference Documents

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SECTION 13289

ASBESTOS ABATEMENT

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI Z88.2	(1992) Respiratory Protection

THE NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1926	Safety and Health Regulations for Construction
40 CFR 61	National Emission Standards for Hazardous Air Pollutants
40 CFR 763	Asbestos
49 CFR 171	General Information, Regulations, and Definitions
49 CFR 172	Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements

NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH (NIOSH)

NIOSH 7400	(1994) Asbestos and Other Fibers by PCM: Method 7400

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only or as otherwise designated. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Pre-Construction Submtittals

Respiratory Protection Program; G-AO

Submit Contractor's written respiratory protection program manual required by 29 CFR 1926, Section 1101.

Historic Airborne Fiber Data; G-AO

Submit airborne asbestos fiber count data from an independent air monitoring firm to substantiate selection of respiratory protection proposed. Data submitted shall include at least the following for each procedure required by the work:

a. Date of measurement

b. Operation monitored

c. Sampling and analytical methods used and evidence of their accuracy.

d. Number, duration, and results of samples taken.

SD-06 Test Reports

Report from Medical Examination; G-AO

Submit report of medical examination conducted within last 12 months in compliance with OSHA medical surveillance requirements for each worker who is to enter the Work Area. Submit, at a minimum, for each staff member the following:

a. Name and Social Security Number

b. Physicians Written Opinion from examining physician including at a minimum the following:

1. Whether worker has any detected medical conditions that would place the worker at an increased risk of material health impairment from exposure to asbestos.

2. Any recommended limitations on the worker or on the use of personal protective equipment such as respirators.

3. Statement that the worker has been informed by the physician of the results of the medical examination and of any medical conditions that may result from asbestos exposure.

c. Copy of information that was provided to physician in compliance with 29 CFR 1926.

d. Statement that worker is able to wear and use the type of respiratory protection proposed for the project, and is able to work safely in an environment capable of producing heat stress in the worker.

SD-07 Certificates

AHERA Accreditation; G-AO

Submit copies of certificates from an EPA-approved AHERA Abatement Workers course for each worker as evidence that each asbestos

Abatement Worker is accredited as required by the AHERA Regulation 40 CFR 763 Appendix C to Subpart E, April 30, 1987.

Abatement Staff Certification and Licensing; G-AO

Submit copies of certificates and licenses that all abatement staff have been trained, certified and accredited as required by jurisdictional authority.

1.3 QUALITY ASSURANCE

1.3.1 Personnel Requirements:

a. All abatement staff and supervisors assigned to this project are required to be in possession of valid and current asbestos certifications from the State of North Dakota Department of Health.

b. Asbestos Abatement Contractor: The contractor selected to perform asbestos related work for this project will be required to be licensed by the State of North Dakota to perform asbestos related work.

c. Abatement Contractor General Superintendent: Provide a full-time General Superintendent who is experienced in administration and supervision of asbestos abatement projects including work practices, protective measures for building and personnel, disposal procedures, etc. This person is the Contractor's Representative responsible for compliance with all applicable federal, state and local regulations, particularly those relating to asbestos-containing materials.

1. Experience and Training: The General Superintendent must have completed a course at an EPA Training Center or equivalent certificate course in asbestos abatement procedures, and have had a minimum of two (2) years on-the-job training in asbestos abatement procedures.

2. Competent Person: The General Superintendent is to be a Competent Person as required by OSHA 29 CFR 1926

3. AHERA Accreditation: The General Superintendent is to be accredited as an Asbestos Abatement Supervisor in accordance with the AHERA regulation 40 CFR 763, Subpart E, Appendix C.

d. Abatement Staff Certification and Licensing: All abatement staff are to be accredited as Abatement Workers as required by the AHERA regulation 40 CFR 763 Appendix C to Subpart E, April 30, 1987.

1.3.2 Medical Exminationss

Provide report from medical examination for all abatement staff that may encounter an airborne fiber level of 0.1 f/cc or greater for an 8 hour Time Weighted Average. In the absence of specific airborne fiber data provide medical examinations for all personnel who will enter the Work Area for any reason. Examination shall as a minimum meet OSHA requirements as set forth in 29 CFR 1926 In addition, provide an evaluation of the individuals ability to work in environments capable of producing heat stress in the

worker.

1.3.3 Pre-Construction Conference

Attend a "Pre-Construction Conference" convened by the Owner's Representative prior to start of any work. Meet at project site, or as otherwise directed with General Superintendent, Owner, Owner's Representative, Project Administrator, and other entities concerned with the asbestos abatement work. Review responsibilities and personnel assignments and to locate the containment and decontamination areas and temporary facilities including power, light, water, etc.

1.3.4 Notices

Send Written Notification required by USEPA National Emission Standards for Hazardous Air Pollutants (NESHAPS) Asbestos Regulations (40 CFR 61, Subpart M) and North Dakota Air Pollution Control Rules Section 33-15-13-02 to the regional Asbestos NESHAPS Contact at least 10 days prior to beginning any work on asbestos-containing materials. Send notification to the following address:

North Dakota Department of Health
1200 Missouri Avenue
P.O. Box 5520
Bismarck, ND 58502-5520
(800) 227-8917

1.4 TESTING AND SAMPLING

1.4.1 Personnel Monitoring

Perform air monitoring as required to meet OSHA requirements for maintenance of Time Weighted Average (TWA) fiber counts for types of respiratory protection provided. Owner will not perform air monitoring to meet these requirements. Provide copies of personnel monitoring performed to the Owner's Representative within 24 hours.

1.4.2 Documentation

Testing documentation to comply with all applicable federal and state regulations. Maintain a permanent testing log for the entire time that work is in progress at that site. Document all test designs and all air samples taken, including date, time, type, phase, and time span of sample. Indicate whether sample was for before start of work, daily work sample, or for final work area clearance. Identify with all samples with a unique number and location description. Report all results and interpretations to the Owner's Representative and Contractor according to the number and location description entered in the permanent log. At the completion of the project, supply the Owner with one good, readable copy of every entry, in the on-site testing log. Provide documentation acceptable to the Owner of the Social Security and State Certification numbers for all personnel participating in this project.

1.4.3 Laboratory Testing

Employ the services of a testing laboratory to perform laboratory analysis of the air samples. A microscope and technician will be set up at the job site, so that verbal reports on air samples can be obtained immediately. A complete record, certified by the testing laboratory, of all air monitoring

tests and results will be furnished to the Owner's Representative, the Owner, and the Contracto

1.4.4 Analytical Methods

Use the following methods for air monitoring in analyzing filters used to collect air samples. Sampling rates may be varied from printed standards to allow for high volume sampling.

a. Phase Contrast Microscopy (PCM) will be performed using the NIOSH 7400 method. This analysis will be carried out at the job site.

1.4.5 Schedule of Air Samples

Prior to commencement of work secure the following Air Samples to establish a base line before start of work:

Sample Cassettes: Collect samples on 25 mm. cassettes as follows:

PCM: 0.8 micrometer mixed cellulose ester.

Sampling sensitivity in the table below refers to:

Quantification Limit for PCM analysis as set forth in the analytical method used.

Location Sampled	Number of Samples	Sampling Analysis Method	Minimum Sensitivity Fibers/cc.	Volume (Liters)	Rate LPM
Outside Each Work Area	5**	PCM	0.01	2,000**	1-10

** or as determined by on-site project monitor or air sampling professional.

Base Line: An action level expressed in fibers per cubic centimeter, which is twenty-five percent greater than the largest of the following:

Average of the PCM samples collected outside each Work Area.

Average of the PCM samples collected outside the building fibers per cubic centimeter.

Daily:

Take the following samples on a daily basis.
Collect samples on 25 mm. cassettes with the following filter media:

PCM: 0.8 micrometer mixed cellulose ester.

Location Sampled	Number of Samples	Quantification Analysis Method	Minimum Limit Fibers/cc.	Volume (Liters)	Rate LPM
Outside Each Work Area at Critical Barrier	1	PCM	0.01	1,200*	1-10

Outside Exit of Clean Room	1	PCM	0.01	1,200*	1-10
Outside Exit of Equip Decon	1	PCM	0.01	1,200*	1-10

Additional samples may be required at Owner's or Owner's Representative's discretion. If airborne fiber counts exceed allowed limits additional samples will be taken as necessary to monitor fiber levels.

Written Reports of all air monitoring tests will be posted at the job site on a daily basis.

Furnish a complete record of all air monitoring and results to the Owner's Representative, the Owner, and the Contractor.

PART 2 PRODUCTS

2.1 HEPA FILTERED FAN UNITS

2.1.1 Cabinet

Construct shell of durable materials able to withstand damage. Make width of the cabinet less than 30 inches. Provide units whose cabinets are:

a. Factory-sealed to prevent asbestos-containing dust from being released during use, transport, or maintenance.

b. Arranged to provide access to and replacement of all air filters from intake end.

c. Mounted on casters or wheels.

2.1.2 Fans

Rate capacity of fan according to usable air-moving capacity under actual operating conditions.

2.1.3 HEPA Filters

Provide units whose final filter is the HEPA type with the filter media (folded into closely pleated panels) completely sealed on all edges with a structurally rigid frame.

a. Provide units with a continuous rubber gasket located between the filter and the filter housing to form a tight seal.

b. Provide HEPA filters that are individually tested and certified by the manufacturer to have an efficiency of not less than 99.97 percent when challenged with 0.3 um.

c. Provide filters that are marked with: the name of the manufacturer, serial number, air flow rating, efficiency and resistance, and the direction of test air flow.

2.1.4 Pre-filters

Two stages of pre-filtration are required. Provide units with the

following pre-filters:

a. First-stage pre-filter: Low-efficiency type (e.g., for particles 100 um and larger).

b. Second-stage (or intermediate) filter: medium efficiency (eg., effective for particles down to 5 um).

2.1.5 Unit Filters

Provide units with pre-filters and intermediate filters either on or in the intake grid of the unit and held in place with housings or clamps. Install new pre-filters after arrival on site.

2.2 PROTECTIVE CLOTHING

2.2.1 Coveralls

Provide disposable full-body coveralls and disposable head covers, and require that they be worn by all personnel in the Work Area. Provide a sufficient number for all required changes, for all personnel in the Work Area.

2.2.2 Boots

Provide work boots with non-skid soles, and where required by OSHA, foot protection, for all workers. Provide boots at no cost to personnel. Paint uppers of all boots red with waterproof enamel. Do not allow boots to be removed from the Work Area for any reason, after being contaminated with asbestos-containing material. Dispose of boots as asbestos-contaminated waste at the end of the work.

2.2.3 Hard Hats

Provide OSHA compliant head protection (hard hats) for all personnel. Label hats with same warning labels as used on disposal bags. Require hard hats to be worn at all times that work is in progress that may potentially cause head injury. Provide hard hats of type with plastic strap type suspension. Require hats to remain in the Work Area throughout the work. Thoroughly clean, decontaminate and bag hats before removing them from Work Area at the end of the work.

2.2.4 Goggles

Provide OSHA compliant eye protection (goggles) for all personnel involved in scraping, spraying, or any other activity, which may potentially cause eye injury. Thoroughly clean, decontaminate and bag goggles before removing them from Work Area at the end of the work.

2.2.5 Gloves

Provide work gloves to all personnel and require that they be worn at all times in the Work Area. Do not remove gloves from Work Area. Dispose of as asbestos-contaminated waste at the end of the work.

2.3 RESPIRATORY PROTECTION

2.3.1 Type of Requried Respiratory Protection

Provide respiratory protection through determining the proper level of protection by dividing the expected or actual airborne fiber count in the Work Area by the "protection factors" given below. The level of respiratory protection which supplies an airborne fiber level inside the respirator, at the breathing zone of the wearer, at or below the permissible exposure limit (PEL) is the minimum level of protection allowed.

2.3.2 Respirator Construction

a. Respirator Bodies: Provide half face or full face type respirators. Equip full face respirators with a nose cup or other anti-fogging device as would be appropriate for use in air temperatures less than 32 degrees fahrenheit.

b. Filter Cartridges: Provide, at a minimum, HEPA type filters labeled with NIOSH and MSHA Certification for "Radionuclides, Radon Daughters, Dust, Fumes, Mists including Asbestos-Containing Dusts and Mists" and color coded in accordance with ANSI Z88.2 (1980). In addition, a chemical cartridge section may be added, if required, for solvents, etc., in use. In this case, provide cartridges that have each section of the combination canister labeled with the appropriate color code and NIOSH/MSHA Certification

c. Non-permitted respirators: Do not use single use, disposable or quarter face respirators.

2.3.3 Respiration Levels Required

Provide respiratory protection through determining the proper level of protection by dividing the expected or actual airborne fiber count in the Work Area by the "protection factors" given below. The level of respiratory protection which supplies an airborne fiber level inside the respirator, at the breathing zone of the wearer, at or below the permissible exposure limit (PEL) is the minimum level of protection allowed

2.4 AIR PURIFYING RESPIRATORS

2.4.1 Negative Pressure - Half or Full Face Mask Type

Provide a sufficient quantity of respirator filters approved for asbestos, so that personnel can change filters during the work day. Require that respirators be wet-rinsed, and filters discarded, each time a person leaves the Work Area. Require that new filters be installed each time a person re-enters the Work Area. Store respirators and filters at the job site in the changing room and protect totally from exposure to asbestos prior to their use.

2.4.2 Powered air Purifying - Half or Full Face Mask Type

Provide a sufficient quantity of high efficiency respirator filters approved for asbestos so that workers can change filters at any time that flow through the face piece decreases to the level at which the manufacturer recommends filter replacement. Require that regardless of flow, filter cartridges be replaced after 40 hours of use. Require that HEPA elements in filter cartridges be protected from wetting during

showering. Require entire exterior housing of respirator, including blower unit, filter cartridges, hoses, battery pack, face mask, belt, and cords, be washed each time a person leaves the Work Area. Caution should be used to avoid shorting battery pack during washing. Provide an extra battery pack for each respirator so that one can be charging while one is in use.

2.5 RESPIRATOR USAGE

Comply with ANSI Z88.2 - 1980 "Practices for Respiratory Protection" and OSHA 29 CFR 1910 and OSHA 29 CFR 1926. Regardless of Airborne Fiber Levels: Require that the minimum level of respiratory protection used be half-face air-purifying respirators with high efficiency filters. All personnel entering "Work Areas" shall comply with the requirements of the Respiratory Protection Program.

2.5.1 General Usage

Require that a respirator be worn by any person in a Work Area at all times, regardless of activity, during a period that starts with any operation which could cause airborne fibers until the area has been cleared for re-occupancy in accordance with this section.

2.5.2 Fit Testing

a. Initial Fitting: Provide initial fitting of respiratory protection during a respiratory protection course of training. Fit types of respirator to be actually worn by each individual. Allow an individual to use only those respirators for which training and fit testing has been provided.

b. Upon Each Wearing: Require that each time an air-purifying respirator is put on it be checked for fit with a positive and negative pressure fit test in accordance with the manufacturer's instructions or ANSI Z88.2 (1980).

2.6 DECONTAMINATION UNITS - GENERAL

Provide separate Personnel and Equipment Decontamination facilities. Require that the Personnel Decontamination Unit be the only means of ingress and egress for the Work Area. Require that all materials exit the Work Area through the Equipment Decontamination Unit.

2.6.1 Shower Head and Controls

Provide a factory-made shower head producing a spray of water which can be adjusted for spray size and intensity. Feed shower with water mixed from hot and cold supply lines. Arrange so that control of water temperature, flow rate, and shut off is from inside shower without outside aid.

2.6.2 Filters

a. Provide cascaded filter units on drain lines from showers or any other water source carrying asbestos-contaminated water from the Work Area.

b. Provide units with disposable filter elements as indicated below. Connect so that discharged water passes primary filter and output of primary filter passes through secondary filter.

1. Primary Filter - Passes particles 20 microns and smaller.

2. Secondary Filter - Passes particles 5 microns and smaller.

2.6.3 Shower Stall

For Wash Down Station, provide leak tight shower enclosure with integrated drain pan fabricated from fiberglass or other durable waterproof material, approximately 3' x 3' square with minimum 6' high sides and back. Structurally support as necessary for stability. Equip with hose bib, as specified in this section, mounted at approximately 4'-0" above drain pan. Connect drain to a reservoir, pump water from reservoir through filters to a drain or store and use for amended water. Mount filters inside shower stall on back wall beneath hose bib.

2.6.4 Sump Pump

Provide totally submersible waterproof sump pump with integral float switch. Provide unit sized to pump 2 times the flow capacity of all showers or hoses supplying water to the sump, through the filters specified herein when they are loaded to the extent that replacement is required. Provide unit capable of pumping debris, sand, plaster or other materials washed off during decontamination procedures without damage to mechanism of pump. Adjust float switch so that a minimum of 3" remains between top of liquid and top of sump pan.

2.7 PERSONNEL DECONTAMINATION UNIT

Provide a Personnel Decontamination Unit consisting of a serial arrangement of connected rooms or spaces, Changing Room, Drying Room, Shower Room, Equipment Room. Require all persons without exception to pass through this Decontamination Unit for entry into and exiting from the Work Area for any purpose. Do not allow parallel routes for entry or exit. Do not remove equipment or materials through Personnel Decontamination Unit.

2.8 EQUIPMENT DECONTAMINATION UNIT

Provide an Equipment Decontamination Unit consisting of a serial arrangement of rooms, Clean Room, Holding Room, Wash Room for removal of equipment and material from Work Area. Do not allow personnel to enter or exit Work Area through Equipment Decontamination Unit.

PART 3 EXECUTION

3.1 PERMISSIBLE EXPOSURE LIMIT (PEL)

8-Hour Time Weighted Average (TWA) of asbestos fibers to which any person may be exposed shall not exceed the following.

Time Weighted Average (TWA) = 0.1 fibers/cubic centimeter

Fibers: For purposes of this section, fibers are defined as all fibers regardless of composition as counted in the NIOSH 7400 procedure.

3.2 RESPIRATOR PROTOCOL

Instruct and train each worker involved in asbestos abatement or maintenance and repair of friable asbestos-containing materials in proper

respiratory use and require that each worker always wear a respirator, properly fitted on the face in the Work Area from the start of any operation which may cause airborne asbestos fibers until the Work Area is completely decontaminated. Use respiratory protection appropriate for the fiber level encountered in the work place or as required for other toxic or oxygen-deficient situations encountered.

3.3 DECONTAMINATION ENTRY

Each time Work Area is entered remove all street clothes in the Changing Room of the Personnel Decontamination Unit and put on new disposable coverall, new head cover, and a clean respirator. Proceed through shower room to equipment room and put on work boots.

3.4 AIR MONITORING - TESTING LABOARATOARY SERVICES

3.4.1 Air Monitoring

Provide work area isolation air monitoring to detect faults in the work area isolation such as:

Contamination of the building outside of the work area with airborne asbestos fibers, failure of filtration or rupture in the differential pressure system.

3.4.2 Failure and Contamination

Should any of the above occur, immediately cease asbestos abatement activities until the fault is corrected. Do not recommence work until authorized by the Owner's Representative.

3.4.3 Continuous Monitoring

Conduct air monitoring throughout the course of the project.

3.4.4 Historic Airborne Fiber

Submit historic airborne fiber data as described in Part 1.

3.5 STOP ACTION LEVELS

3.5.1 Outside Work Area

If any air sample taken outside of the Work Area exceeds the base line established below, immediately and automatically stop all work except corrective action. The Owner's Representative will determine the source of the high reading and so notify the Contractor in writing.

3.5.2 Isolation Failure Action

If the high reading was the result of a failure of Work Area isolation measures, initiate the following actions:

a. Immediately erect new critical barriers to isolate the affected area from the balance of the building. Erect Critical Barriers at the next existing structural isolation of the involved space (eg. wall, ceiling, floor).

b. Decontaminate the affected area.

c. Require that respiratory protection be worn in affected area until area is cleared for re-occupancy.

d. Leave Critical Barriers in place until completion of work and insure that the operation of the pressure differential system in the Work Area results in a flow of air from the balance of the building into the affected area.

e. If the exit from the clean room of the personnel decontamination unit enters the affected area, establish a decontamination facility consisting of a Shower Room and Changing Room at entry point to affected area.

f. Final air samples will be taken within the affected area, and if acceptable, continue with the abatement process of the work area.

3.5.3 Other Causes Failure Action

If the high reading was the result of other causes initiate corrective action as determined by the Owner's Representative.

3.6 STOP WORK

If the Critical or Primary barrier falls or is breached in any manner, stop work immediately. Do not start work until repairs to the barriers have been made and authorization from the Owner's Representative.

3.7 WORK AREA AIR MONITORING CLEARANCE CRITERIA

3.7.1 Contractor Release Criteria

The Asbestos Abatement Work Area is cleared when the Work Area is visually clean and airborne asbestos structure concentrations have been reduced to the level specified below.

To determine if the elevated airborne asbestos structure concentration encountered during abatement operations has been reduced to the specified level, the Owner will secure samples and analyze them according to the following procedures.

Sampling: PCM samples will be secured as indicated below.

Work Area Clearance: Upon meeting the clearance requirements, the work removal of the containment barriers will be authorized.

Aggressive sampling procedures as described below will be followed.

3.8 AGGRESSIVE SAMPLING

3.8.1 Sampling Criteria

All Air Samples will be taken using aggressive sampling techniques as follows:

a. Before sampling pumps are started the exhaust from forced-air equipment (leaf blower with an approximately 1 horsepower electric motor) will be swept against all walls, ceilings, floors, ledges and other surfaces in the room. This procedure will be continued for 5 minutes per 10,000 cubic feet of room volume.

b. One 20 inch diameter fan per 10,000 cubic feet of room volume will be mounted in a central location at approximately 2 meters above floor, directed toward ceiling and operated at low speed for the entire period of sample collection.

c. Air samples will be collected in areas subject to normal air circulation away from room corners, obstructed locations, and sites near windows, doors or vents.

d. After air-sampling pumps have been shut off, fans will be shut off.

3.9 SCHEUDLE OF AIR SAMPLES

The number and volume of air samples taken and analytical methods used by the Contractor will be in accordance with the following schedule. Sample volumes given may vary depending upon the analytical instruments used.

3.10 PHASE CONTRAST MICROSCOPY

In each homogeneous work area after completion of all cleaning work, a minimum of 7 samples will be taken and analyzed as follows:

Collect samples on 25 mm cassettes with the following filter media:

PCM: 0.8 mixed cellulose ester in a cassette with a conductive extension cowl.

Location Sampled	Number of Samples	Analysis Method	Acceptance Criteria Fibers/cc.	Minimum Volume (Liters)	Rate PM
Each Work Area	5	PCM	<0.010	2,000	0.5-10
or					
Each Room of Work Area	1 (5 min.)	PCM	<0.010	2,000	0.5-10

Analysis: Fibers on each filter will be measured using the NIOSH Method 7400 entitled "Asbestos and Other Fibers by PCM" published in the NIOSH Manual of Analytical Methods, Fourth Edition, August 15, 1994.

Fibers: Referred to in this section include fibers regardless of composition as counted by the phase contrast microscopy method used.

Release Criteria: Decontamination of the work site is complete when all of the following criteria are met:

All five of the air sample analysis results are less than 0.01 f/cc.

If any of the above criteria are not met, then the decontamination is incomplete and re-cleaning is required.

3.11 MONITORING

Continuously monitor and record the pressure differential between the Work Area and the building outside of the Work Area with a print record

continuous manometer.

Relative Pressure in Work Area: Continuously maintain the work area at an air pressure that is lower than that in any surrounding space in the building, or at any location in the immediately proximity outside of the building envelope. This pressure differential when measured across any physical or critical barrier must equal or exceed a static pressure of 0.02 inches of water.

Accomplish the pressure differential by exhausting a sufficient number of HEPA filtered fan units from the work area. The number of units required will depend on machine characteristics, the seal at barriers, and required air circulation. The number of units will increase with increased make-up air or leaks into the Work Area. Determine the number of units required for pressure isolation by the following procedure:

Establish required air circulation in the work area, personnel and equipment decontamination units.

Establish isolation by increased pressure in adjacent areas or as part of seals where required.

Exhaust a sufficient number of units from the work area to develop the required pressure differential.

The required number of units is the number determined above plus one additional unit.

Determining the Air Circulation Requirements: Provide a fully operational air circulation system supplying a minimum of the following air circulation rate 6 air changes per hour.

Determine Number of Units needed to achieve required air circulation according to the following procedure:

Determine the volume in cubic feet of the work area by multiplying floor area by ceiling height. Determine total air circulation requirement in cubic feet per minute (CFM) for the work area by multiplying this volume by the air change rate and dividing by 60 minutes per hour.

Air Circulation Required in Cubic Feet of Air per Minute (CFM) =

$$\text{Volume of work area (cu. ft.)} \times \frac{\text{Number of air changes per hour}}{\text{60 (minutes per hour)}}$$

Divide the air circulation requirement (CFM) above by capacity of HEPA filtered fan unit(s) used. Capacity of a unit for purposes of this section is the capacity in cubic feet per minute with fully loaded filters (pressure differential which causes loaded filter warning light to come on) in the machine's labeled operating characteristics.

$$\text{Number of Units Needed} = \frac{\text{Air Circulation Requirement (CFM)}}{\text{Capacity of Unit with Loaded Filters (CFM)}}$$

Add one (1) additional unit as a backup in case of equipment failure or machine shutdown for filter changing.

3.12 TEMPORARY PRESSURE DIFFERENTIAL AND AIR CIRCULATING SYSTEM

3.12.1 Control Access

Isolate the Work Area to prevent entry by building occupants into Work Area or surrounding controlled areas.

3.12.2 Visual Barrier

Where the Work Area is immediately adjacent to or within view of occupied areas, provide a visual barrier of opaque polyethylene sheeting at least 6 mil in thickness so that the work procedures are not visible to building occupants. Where this visual barrier would block natural light, substitute frosted or woven rip-stop sheet plastic in locations approved by the Owner's Representative.

3.12.3 Warning Signs

Provide Warning Signs at each locked door leading to Work Area reading as follows:

Legend	Notation
KEEP OUT	3" Sans Serif Gothic or Block
BEYOND THIS POINT	1" Sans Serif Gothic or Block
ASBESTOS ABATEMENT WORK	1" Sans Serif Gothic or Block
IN PROGRESS	1" Sans Serif Gothic or Block
BREATHING ASBESTOS DUST MAY BE HAZARDOUS TO YOUR HEALTH	14 Point Gothic

3.13 CRITICAL BARRIERS

Completely Separate the Work Area from other portions of the building, and the outside by closing all openings with sheet plastic barriers at least 6 mil in thickness, or by sealing cracks leading out of Work Area with duct tape.

3.13.1 Sealing Openings

Individually seal all ventilation openings (supply and exhaust), clocks, doorways, windows, convectors and speakers, and other openings into the Work Area with duct tape alone or with polyethylene sheeting at least 6 mil in thickness, taped securely in place with duct tape. Maintain seal until all work including Project Decontamination is completed.

3.13.2 Barriers

Provide Sheet Plastic barriers at least 6 mil in thickness as required to seal openings completely from the Work Area into adjacent areas. Seal the perimeter of all sheet plastic barriers with duct tape or spray cement.

3.13.3 Barrier Support

Mechanically Support sheet plastic independently of duct tape or spray cement seals so that seals do not support the weight of the plastic. Following are acceptable methods of supporting sheet plastic barriers. Alternative support methods may be used if approved in writing by the Owner's Representative.

3.14 PRIMARY BARRIER

Protect building and other surfaces in the Work Areas from damage from water and high humidity or from contamination from asbestos-containing debris, slurry or high airborne fiber levels by covering with a primary barrier consisting of two (2) layers of plastic sheeting on walls in those spaces with wall finishes. Areas with concrete walls may be protected with one (1) layer of sheet plastic. Carpeted and/or tiled floors will be covered by two (2) layers of 6 mil polyethylene, followed by a layer of corrugated cardboard to be covered with a final layer of 6 mil polyethylene on the top. Floor protection for concrete terrazzo will consist of a 6 mil drop cloth directly under work being performed. The non-slip stair runners will be covered with a layer of duct tape.

3.15 TEMPORARY ENCLOSURES

3.15.1 Air Preparation

Clean all contaminated furniture, equipment, and or supplies with a HEPA filtered vacuum cleaner or by wet cleaning, prior to being moved or covered. All equipment furniture, etc. is to be closely examined for determination of potential asbestos contamination. If visual evidence of contamination is observed, then appropriate decontamination procedures must be followed.

3.15.2 Cleaning

Clean All Surfaces In Work Area with a HEPA filtered vacuum or by wet wiping prior to the installation of primary barrier.

3.15.3 Work Area

The location where asbestos-abatement work occurs. It is a variable of the extent of work of the Contract. It may be a portion of a room, a single room, or a complex of rooms. A "Work Area" is considered contaminated during the work, and must be isolated from the balance of the building, and decontaminated at the completion of the asbestos-control work.

3.15.4 Isolation

Completely isolate the Work Area from other parts of the building so as to prevent asbestos-containing dust or debris from passing beyond the isolated area. Should the area beyond the Work Area(s) become contaminated with asbestos-containing dust or debris as a consequence of the work, clean those areas in accordance with the procedures indicated in this section. Perform all such required cleaning or decontamination at no additional cost to owner. Isolation shall include construction of a wood stud and double sided plywood barrier at locations where directed by Owner's Representative or On-site Project Manager.

3.15.5 Removal and Protection

Remove all removable furniture that has been designated uncontaminated by the Contract Documents or Owner's Representative. Also remove uncontaminated equipment, and/or supplies from the Work Area before commencing work, or completely cover with two (2) layers of polyethylene sheeting, at least 6 mil in thickness, securely taped in place with duct tape. Such furniture and equipment shall be considered outside the work

area unless covering plastic or seal is breached.

3.15.6 Disabling

Disable ventilating systems or any other system bringing air into or out of the Work Area. Disable system by removing circuit breakers, by lockable switch or other positive means that will prevent accidental premature restarting of equipment.

3.15.7 Lockout

Lockout power to Work Area by switching off all breakers serving power or lighting circuits in work area. Label breakers with tape over breaker with notation "DANGER circuit being worked on". Lock panel and have all keys under control of Contractor's Superintendent or Owner's Representative.

3.15.8 Signage and Notification

Lockout power to circuits running through work area wherever possible by switching off all breakers or removing fuses serving these circuits. Label breakers with tape over breaker with notation "DANGER circuit being worked on". Lock panel and have all keys under control of contractor's superintendent or owner's designated representative. If circuits cannot be shut down for any reason, label at intervals 4'-0" on center with tags reading, "DANGER live electric circuit. Electrocution hazard." Label circuits in hidden locations but which may be affected by the work in a similar manner.

3.15.9 Emergency Exiting

At each existing exit door from the Work Area provide a means for emergency exiting.

3.16 DECONTAMINATION PROCEDURES

Require that all personnel use the following decontamination procedure as a minimum requirement whenever leaving the Work Area.

3.16.1 Garment Disposal

When exiting area, remove disposable coveralls, disposable head covers, and disposable footwear covers or boots in the equipment room

3.16.2 Showering

Still wearing respirators, proceed to showers. Showering is mandatory.

3.16.3 Shower Protocol

Care must be taken to follow reasonable procedures in removing the respirator to avoid asbestos fibers while showering. The following procedure is required as a minimum:

a. Thoroughly wet body including hair and face. If using a Powered Air-Purifying Respirator (PAPR) hold blower unit above head to keep canisters dry.

b. With respirator still in place thoroughly wash body, hair, respirator face piece, and all parts of the respirator except the

blower unit and battery pack on a PAPR. Pay particular attention to seal between face and respirator and under straps.

c. Take a deep breath, hold it and/or exhale slowly, completely wet hair, face, and respirator. While still holding breath, remove respirator and hold it away from face before starting to breath.

d. Carefully wash face-piece of respirator inside and out.

e. If using PAPR: shut down in the following sequence, first cap inlets to filter cartridges, then turn off blower unit (this sequence will help keep debris which has collected on the inlet side of filter from dislodging and contaminating the outside of the unit). Thoroughly wash blower unit and hoses. Carefully wash battery pack with wet rag. Be extremely cautious of getting water in battery pack as this will short out and destroy battery.

f. Shower completely with soap and water.

g. Rinse thoroughly.

h. Rinse shower room walls and floor prior to exit.

i. Proceed from shower to Changing Room and change into street clothes or into new disposable work items.

3.16.4 Within Work Area

Require that personnel NOT eat, drink, smoke, chew tobacco or gum, or apply cosmetics in the Work Area. To eat, chew, drink or smoke, personnel shall follow the procedure described above, and then dress in street clothes before entering the non-Work Areas of the building.

3.17 PROJECT DECONTAMINATION

Work of This Section includes the cleaning, and decontamination of all surfaces of the Work Area, and all furniture or equipment in the Work Area.

Start of Work: Work of this section begins with the cleaning of the Primary Barrier. At start of work the following will be in place:

Primary Barrier: Two layers of polyethylene sheeting on floor and one layer on walls in finished areas and as modified in unfinished spaces.

Critical Barrier: An airtight barrier between the Work Area and other portions of the building or the outside.

Critical Barrier Sheeting: Over lighting fixtures and clocks, ventilation openings, doorways, convectors, speakers and other openings.

Decontamination Units: For personnel and equipment in operating condition.

Pressure Differential System still in operation.

3.18 FIRST CLEANING

3.18.1 First Cleaning

Carry out a first cleaning of all surfaces of the work area including items of remaining sheeting, tools, scaffolding and/or staging by use of damp-cleaning and mopping, and/or a High Efficiency Particulate Air (HEPA) filtered vacuum. (Note: A HEPA vacuum may fail if used with wet material.) Do not perform dry dusting or dry sweeping. Use each surface of a cleaning cloth one time only and then dispose of as contaminated waste. Continue this cleaning until there is no visible debris from removed materials or residue on plastic sheeting or other surfaces.

3.18.2 Removal

Remove All Filters in Air Handling System(s) and dispose of as asbestos-containing waste in accordance with Disposal of Asbestos-Containing Waste Material.

3.19 FINAL CLEANING

3.19.1 Final Cleaning

Carry out a final cleaning of all surfaces in the Work Area in a manner to ensure all residual material has been thoroughly removed. The use of clean disposable towels wetted and disposed of regularly when contaminated is required.

3.19.2 Contractor's Testing

At the completion of the above cleaning visually inspect all surfaces. Wipe surfaces with a dark blue or black towel and inspect for light colored residue. If residue is observed, re-clean the affected areas.

3.20 VISUAL INSPECTION

3.20.1 Inspection

After Final Cleaning Perform a Complete Visual Inspection of the entire Work Area including: all surfaces, ceiling, walls, floor, decontamination unit, all plastic sheeting, seals over ventilation openings, doorways, windows, and other openings; look for debris from any sources, residue on surfaces, dust or other matter. If any debris, residue, dust or other matter is found repeat final cleaning and continue decontamination procedure from that point.

3.20.2 Encapsulation

After completion of visual inspection and authorization by the project manager, perform encapsulation of substrate. Wait until encapsulant is dry on all surfaces prior to final air sampling.

3.21 REMOVAL OF ASBESTOS-CONTAINING MATERIALS

3.21.1 Secondary Barrier

Over the Primary Barrier, install as a drop cloth a clear 6 mil sheet plastic in all areas where asbestos removal work is to be carried out. Completely cover floor with sheet plastic. Where the work is within 10'-0"

of a wall extend the Secondary Barrier up wall to ceiling. Support sheet plastic on wall with duct tape, seal top of Secondary plastic to Primary Barrier with duct tape so that debris is unable to get behind it. Provide cross strips of duct tape at wall support as necessary to support sheet plastic and prevent its falling during removal operations.

3.21.2 Installation

Install Secondary Barrier at the beginning of each work shift. Install only sufficient plastic for work of that shift.

3.21.3 Removal

Remove Secondary Barrier at end of each work shift or as work in an area is completed. Fold plastic toward center of sheet and pack in disposal bags. Keep material on sheet continuously wet until bagged.

3.22 WET REMOVAL

3.22.1 Wetting

Thoroughly wet Asbestos-Containing Materials to be removed prior to stripping and/or tooling to reduce fiber dispersal into the air. Accomplish wetting by a fine spray (mist) of amended water or removal encapsulant. Saturate material sufficiently to wet to the substrate without causing excess dripping. Allow time for amended water or removal encapsulant to penetrate material thoroughly. If amended water is used, spray material repeatedly during the work process to maintain a continuously wet condition. If a removal encapsulant is used, apply in strict accordance with manufacturer's written instructions. Perforate outer covering of any installation which has been painted and/or jacketed in order to allow penetration of amended water or removal encapsulant, or use injection equipment to wet material under the covering. Where necessary, carefully strip away while simultaneously spraying amended water or removal encapsulant on the installation to minimize dispersal of asbestos fibers into the air.

3.22.2 Misting

Mist work area continuously with amended water whenever necessary to reduce airborne fiber levels.

3.22.3 Thermal System Insulation

Spray with a mist of amended water or removal encapsulant. Allow amended water or removal encapsulant to saturate material. If a removal encapsulant is used, use in strict accordance with manufacturer's instructions. Remove job-molded insulation in chunks and hand place in a disposal bag. Do not drop to floor. Remove any residue on pipe or fitting with stiff bristle nylon hand brush. In locations where the pipe fitting insulation is removed from pipe with straight runs insulated with fibrous glass or other non-asbestos containing fibrous material, remove fibrous material as directed (6 inches from the point where it contacts the asbestos containing insulation).

3.22.4 Removal

Remove saturated Asbestos-Containing Material in small sections from all areas. Do not allow material to dry out. As it is removed, simultaneously

pack material while still wet into disposal bags. Twist neck of bags, bend over and seal with minimum three wraps of duct tape. Clean outside and move to Wash Down Station adjacent to Material Decontamination Unit.

a. Evacuate air from disposal bags with a HEPA filtered vacuum cleaner before sealing

b. Active Electrical Equipment: Do not wet materials in the vicinity of active electrical equipment.

c. Restrict Access: Maintain existing access restrictions to areas with active electrical equipment. Allow access to area only to qualified tradespersons with prior experience in the installation and repair of involved equipment.

d. Warning Signs: Post warning signs at the entry point to active electrical equipment as required by OSHA or other applicable regulation.

e. Personnel: Work on active electrical equipment is to be performed by qualified tradespersons with prior experience in the installation or repair of the involved equipment. Restrict access to electrical equipment.

f. Electrical Isolation: Cover exposed conductors with a minimum 1/8" thick neoprene blanket draped over the conductor and surrounding area.

g. Protective Equipment: Provide workers working on or in the vicinity of active electrical with appropriate protective equipment including insulating gloves, boots, and non-conductive tools.

h. Hot Equipment: Do not wet materials on hot piping or equipment.

i. Restrict Access: Maintain any existing access restrictions to areas with hot equipment. Provide railing or other barriers to prevent accidental contact with hot equipment. Allow access to area only to qualified tradespersons with prior experience with the type of equipment involved.

j. Warning Signs: Post warning signs at hot equipment as required by OSHA or other applicable regulation.

k. k. Personnel: Work on hot equipment is to be performed by qualified tradespersons with prior experience with the type of equipment involved. Restrict access to electrical equipment.

l. Protective Equipment: Provide workers working on or in the vicinity of hot equipment with appropriate protective equipment including insulating gloves, boots, and coveralls.

m. Work Procedures: Perform removal work using "Localized Control of Material Release" and "Local Ventilation and Collection System" procedures described below.

3.23 DISPOSAL OF ASBESTOS-CONTAINING WASTE MATERIAL

Disposal Bags: Provide 6 mil thick leak-tight polyethylene bags labeled

with three labels with text as follows:

3.23.1 First Label

Provide in accordance with OSHA 29 CFR 1910, Section 1200(f) of OSHA Hazard Communication standard:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD
BREATHING AIRBORNE ASBESTOS, TREMOLITE, ANTHOPHYLLITE, OR ACTINOLITE FIBERS IS HAZARDOUS TO YOUR HEALTH

3.23.2 Second Label

Provide in accordance with U. S. Department of Transportation regulation on hazardous waste marking. Comply with 49 CFR 171 and 49 CFR 172. Hazardous Substances:

RQ (ASBESTOS)
CLASS 9
NA 2212

3.23.3 Third Label

Contains the following information:

NAME OF WASTE GENERATOR
LOCATION AT WHICH THE WASTE WAS GENERATED

3.23.4 Hauling

All waste is to be hauled by a waste hauler with required licenses from all states and local authority with jurisdiction.

3.23.5 Containers

Load all asbestos-containing waste material in disposal bags or leak-tight drums. All materials are to be contained in one of the following:

Two 6 mil bags or

Two 6 mil bags and a fiberboard drum or

Wrapped in two layers of 6 mil poly sheeting with all seems sealed with 2" duct tape

3.23.6 Protection

Protect interior of truck or dumpster with a minimum of one layer of 6 mil poly sheeting.

3.23.7 Loading

Carefully load containerized waste in fully enclosed dumpsters, trucks or

other appropriate vehicles for transport. Do not transport asbestos materials in open vehicles. Vehicles must be intrinsically balanced. Exercise care before and during transport, to insure that no unauthorized persons have access to the material.

3.23.8 Storage

Do not store containerized materials outside of the Work Area. Take containers from the Work Area directly to a sealed truck or dumpster.

3.23.9 Labeling

Label drums with same warning labels as bags. Uncontaminated drums may be reused. Treat drums that have been contaminated as asbestos-containing waste and dispose of in accordance with this specification.

3.23.10 Transporting

Advise the landfill operator or processor, at least ten days in advance of transport, of the quantity of material to be delivered.

3.23.11 Disposal Site

At disposal site unload containerized waste: At a disposal site, carefully unload sealed plastic bag from the truck. If bags are broken or damaged, return to work site for re-bagging.

3.23.12 Receipts

Retain receipts from landfill for materials disposed of.

3.23.13 Completion

At completion of hauling and disposal of each load submit copy of waste manifest, chain of custody form, and landfill receipt to Owner's Representative.

-- End of Section --